



FRIDAY, SEPTEMBER 17.

ROAD-MASTERS' ASSOCIATION.

Proceedings of the Second Annual Convention.

The second annual convention of the International Roadmasters' Association began at the Matteson House, Chicago, Sept. 8, at 1:30 o'clock. The following members were present: J. W. Kennedy, Bedford, Springfield, Owensboro, & Bloomfield Railroad; L. J. Spaulding, Fitchburg; G. R. Hardy, Boston & Albany; T. G. Armstrong and J. W. Alsop, New York, Pennsylvania & Ohio; L. Ball, Nassau & Lowell; G. W. Bishop, Fitchburg; John Barry, Wilmington & Weldon; I. Burnett, Chicago, Rock Island & Pacific; W. H. Canniff, Lake Shore & Michigan Southern; T. J. Dickey, Fitchburg; Patrick Dee, Ashuelot; W. H. Elton, Boston & New York Air Line; D. L. Harris, Eastern Division Vandalia Line; W. H. Marshall, Middle Division Vandalia Line; J. W. Shanks, New London Northern; G. A. Preston, Vicksburg, Shreveport & Pacific; L. L. Keeler, W. Reilly, Chicago & Alton; Peter Brown, New York, Pennsylvania & Ohio; J. A. Crippen, Chicago, Rock Island & Pacific; John Gainer, Vandalia Line; C. H. Waring, East Tennessee, Virginia & Georgia; F. M. Marsh, Sioux City & Pacific; James E. Vane, Grand Haven; W. D. Shannessy, Grand Rapids & Indiana; R. E. McDonald, Michigan Central; John Tierney, Chicago & Alton; A. W. Willis, Boston, Barre & Gardner; John Sullivan, J. H. Linsley, Chicago, Burlington & Quincy; John Stuart, Coldwater; D. A. Courter, Baltimore & Ohio; James Sloan, Chicago & Eastern Illinois; Thomas White, Chicago & Alton; George H. Graves, Joseph Pool, Lake Shore & Michigan Southern; E. P. Rockwell, Chicago, Pekin & Southwestern; J. Anson, Henry A. Phillips, Lake Shore & Michigan Southern; H. S. Dewey, Missouri Pacific; Joseph McWilliams, Chicago & Northwestern.

Of these 42 members, 24 were new ones enrolled at this meeting.

President L. J. Spaulding, of the Fitchburg Railroad, called the Association to order, and made a short address to the members. He traced the history of the Association, which was organized in Boston, on March 25, 1879, and hoped, as it was the aim of the Association to include in its ranks the names of all roadmasters of the country, that efforts would be made with this end in view. There were many questions continually arising of great interest to roadmasters in the pursuit of their duties. It was, therefore, desirable that they become fraternal, and in the Association there should be a constant endeavor to enlighten each other upon the best manner of performing the work over which they have supervision.

In the absence of Mr. G. T. Wiswell, the Secretary, Mr. W. H. Canniff, of the Lake Shore & Michigan Southern, was elected Secretary *pro tem*.

The Secretary read communications from several members of the Association expressing regret that they would be unable to attend the convention.

The Treasurer, Mr. George R. Hardy, of the Boston & Albany, presented his first annual report, showing the receipts and expenditures alike to have been \$167.50, with no balance on hand. The whole subject of the finances and assessments was referred to a special committee.

Mr. C. Latimer, of the New York, Pennsylvania & Ohio, extended an invitation to the Association, on behalf of City Engineer Cregier, to visit the Crib, and on behalf of the Western Society of Civil Engineers to visit their rooms. Both invitations were accepted with thanks.

The Association then proceeded to elect officers for the ensuing year, with the following result:

President, Isaac Burnett, Chicago, Rock Island & Pacific Railroad; First Vice-President, J. W. Kennedy, Bedford, Springfield, Owensboro & Bloomfield; Second Vice-President, J. W. Alsop, New York, Pennsylvania & Ohio; Secretary, W. H. Canniff, Lake Shore & Michigan Southern; Treasurer, G. R. Hardy, Boston & Albany; Executive Committee, H. S. Dewey, Missouri Pacific; John Gainer, Vandalia Line; D. A. Courter, Baltimore & Ohio; J. W. Shanks, New London Northern; F. M. Marsh, Sioux City & Pacific Railroad.

The Association voted to levy an assessment of \$2.50 on each member to defray expenses.

Messrs. Hardy, Shanks and Canniff were appointed to choose committees to take in charge the various subjects to come before the Association for discussion.

Philadelphia, Cincinnati and St. Louis were suggested as places for holding the next convention, but action was deferred.

The Association adjourned until 8:30 o'clock Thursday morning.

THURSDAY'S SESSION.

The Association reassembled at 9 a. m., the new President, Mr. Isaac Burnett, in the chair, and listened to the

ANNUAL ADDRESS.

by the Vice President, Mr. J. W. Kennedy, of the Bedford, Springfield, Owensboro & Bloomfield road, of which the following is a summary:

He referred to the casualties on American railroads, few of which were attributable to faults of the roadmaster. It had the effect of causing them to feel proud of what they had achieved, and should cause them to strive with all energy and determination to labor in the future to make their branch of railroad service a perfect success. He recommended sobriety as a great essential to the good conduct of the railroad service. In his opinion every roadmaster should select sober men for all the positions over which he had control. Roadmasters should cultivate the acquaintance of the men in their employ. That could only be done by associating with and becoming familiar with them. They could accomplish much more with men who respected them than they could with those who were always in fear of them. Every man should be treated as a man, and should be made to feel that he was entitled to the same respect and kindness other men receive, no matter who they were or how high their positions might be; that he was personally responsible for the position he held, and not a mere machine in the hands of some higher officer. Men should be promoted according to merit, and laboring men should not be treated as hirelings.

Roadmasters should recommend to their employés some good railroad paper or magazine, which contained articles upon some particular branch of railroad work, such as ballasting, replacing rails, contraction and expansion, putting on cross-ties, putting in and taking care of sidings, clearing up the right of way, or some part of the work that must necessarily come before persons in charge of track repairs. Men who work on repairs of railroad tracks should be educated to that degree which would enable each and every man to act as foreman.

The engineer who handles the throttle certainly respected the watchful roadmaster who may happen to be in charge of the track upon which he ran his engine, for when he opened the throttle and gave the locomotive steam and rushed away from the station at a high rate of speed out into the dark and gloomy night, he calmly took his seat, feeling perfectly safe from danger.

It was a well-known fact that there are but a very few general managers who have sufficient experience to understand what was required to keep the tracks of their roads in good and safe condition. Men may be general managers, general superintendents and civil engineers, and yet not be practical track-men. Neither could they tell the condition of their tracks unless they derived their information from the reports of the roadmasters. Such being the case, why should they hesitate in demanding that such track material as might be needed to keep their tracks in order should be furnished whenever required.

Every roadmaster should so qualify and inform himself in reference to the duties of his position as to be able to give a clear and practical idea in reference to anything and everything in his line of duty, and until he could do that he was not a success.

When they took into consideration the importance of the duties of persons in charge of maintenance of way, they should most assuredly feel the necessity of paying the closest and most particular attention to the nature of the soil, the drainage, the different kinds of ballast, and the different kinds and qualities of the timber they may have to use in construction and repair of railroads throughout the United States and Canada. Then, after a careful study of all the various materials that they had to bring into use on the railroads, by actual test, so far as possible, it was well that they met and discussed their experiences and exchanged ideas in regard to everything that pertained to the building of perfect railroad tracks.

Mr. Kennedy called attention to the matter of organizing a mutual aid society for the purpose of relief in cases of permanent disability or death only.

In regard to dividing the Association into four different organizations, he was of the opinion that it should not be done.

The address concluded with some practical remarks on the questions to come before the Association for discussion.

On motion, the address was accepted and placed on file, and a vote of thanks given to Mr. Kennedy.

The Association then proceeded to ballot on the next place of meeting, and Cincinnati, St. Louis and Philadelphia received 12 votes each. After a few more ballots, Cincinnati was selected for the next convention, by a vote of 19 against 13 for Philadelphia.

The members of the Association and their ladies then made an excursion to the crib in the lake, attended by the Mayor of the city and the Chief Engineer of the Pumping Works.

Messrs. Burnett and Armstrong, from the Committee on Track Frogs, reported that, from their own experience and from information derived from roadmasters in different parts of the country, they found that the frog that gave the best results was the steel-rail spring frog always open for main track, for the reason that it was the safest for trains running at a high rate of speed, it gives no jar to rolling stock, is the least injurious to wheels or springs, and its durability is greater than any open or rigid frog, costs less to keep in repair, and costs no more than any other steel-rail frog per foot. The committee also found that the steel-rail rigid frog, with wrought or rolled iron filling between point and wing rails, gave the best results in large yards where switch engines were constantly working. The committee also made some suggestions regarding the manner in which the frogs should be made and put together. The report was accepted and placed on file, and left open for future discussion.

FROGS.

After the excursion the Association re-assembled at 2:30 p. m., and listened to the report of the Committee on Frogs.

Mr. Armstrong, of the New York, Pennsylvania & Ohio Railroad, said it was his twenty-fifth year in the business, and his experience had convinced him that the steel-rail spring frog was the best, the rigid-rail frog was next, the Mansfield after that, and the cast-steel double-faced frog fourth in order of merit. He had never had an accident from a steel spring frog, but they occurred frequently by the use of rigid-rail frogs. He knew of five accidents by the breaking of the rigid-rail frog, which became laminated opposite the points.

L. L. Keller, of the Chicago & Alton, gave a contrary opinion on the steel spring frog, saying that accidents enough had occurred from their use to buy frogs for the whole line. He thought the Mansfield frog was the best.

G. R. Hardy, of the Boston & Albany, favored the cast-iron plated frog, but he was open to conviction. He had never used the steel spring frog.

J. W. Alsop, of the New York, Pennsylvania & Ohio, gave his testimony in favor of the steel rail spring frog, saying that he did not know of any accidents on his division of the road that resulted from its use. He believed that the steel-rail spring frog was, in point of wear, 200 per cent. better than any other. One objection to the use of the cast-iron and the Mansfield frogs was their tendency to become loose, although he considered the latter named frog a good one.

William E. Clark, of the Vermont Valley Railroad, thought the steel-rail spring frog gave the best service. He had used them three years on his line, and never knew an accident to result from their use. The climate was as severe as anywhere, and there were eight passenger trains a day running over the line, and about a million tons of freight being carried over the road annually.

Mr. Linsley, of the Chicago, Burlington & Quincy, said his experience of sixteen years on that line led him to believe that the steel-rail spring frog was the best, and as between the rigid rail and the cast-iron frog he preferred the former.

Secretary Canniff, of the Lake Shore & Michigan Southern, said he could give an opinion only in regard to the cast frog with steel plates, the only frog used on his road.

J. W. Patch, of the Connecticut River Railroad, said that every kind of frog made had been used on that line, and the steel-rail spring frog gave him the best satisfaction, though no accidents had resulted from the use of the rigid-rail frogs. They had the steel-rail spring frog in use over eight years, and they were still good. The rigid-rail frogs had been in use but three years, and they had not shown signs of wear enough to warrant their removal. He found no objection as yet to the rigid-rail frog. The Mansfield frog was in use on the same portion of the line where the steel-rail spring frogs were, and they had been down six years, would have to be replaced by new ones this fall. In his opinion, the steel-rail spring frog would last three times as long as any other frog.

L. J. Spaulding, of the Fitchburg Railroad, said that the Mansfield frog was in general use on that line, and he considered it a very fine frog. He had known them to become loose. About sixty-five trains a day passed over his line. He had not used steel-rail spring frogs.

J. W. Kennedy, of the Bedford, Springfield, Owensboro & Bloomfield (narrow gauge), had used rigid-rail frogs successfully.

Charles Latimer, Chief Engineer of the New York, Penn-

sylvania & Ohio, believed that the steel-rail spring frog, in general use on his line, was the best. His judgment was in favor of the use of the spiral spring in the rail, instead of the rubber spring.

President Burnett, of the Chicago, Rock Island & Pacific, remarked that he had used the rigid-rail open frog and the steel-rail spring frog, and preferred the latter for use on the main line. A steel-rail spring frog cost \$12, and the rigid-rail frog \$8, and the percentage of economy in favor of the former over the latter was three to one.

At the suggestion of Mr. Hardy, the discussion was closed, and the subjects referred to Messrs. McDonald, Marshall and Courter as a committee to report the facts deduced from the discussion, and after deliberation they gave the opinion that the steel-rail spring frog always open for main track is the best, safest and most economical frog to be used for a main track.

THE EFFECT OF FROST ON BALLAST.

The comparative action of frost on different materials composing road-bed, and tests made of obviating heaving, utility of tile, and deep ditching were the subject for discussion.

Mr. Latimer, in giving his opinion, said that he had found, in connection with good, deep ditching, that mill slag was the best material to use in obviating heaving.

J. W. Shanks, of the New London Northern, said his line was located in a cold climate, where the frost was about three feet deep in winter, and he had found that the use of plenty of gravel had the effect to prevent heaving.

Mr. Hardy, of the Boston & Albany, said that the adoption of a cross-section system had proved beneficial on his line. The surface water should be made to run freely from the track, and the ballast should be drained to the depth of two feet to carry away the water in the ditches. His road had been greatly improved by ditching and putting in better material under the rails and ties. They had undertaken to do the latter by reballasting.

Mr. Armstrong urged the use of slag or broken stone to obviate heaving, and gave the result of his experience in protecting the ends of the ties, constructing the cattle-guards, ditching, etc.

Messrs. Kennedy, Marsh and Phillips gave the results of their experience in the drainage of quicksand clay, which all said could be utilized for road-beds, with proper drainage.

The discussion was closed, and the matter referred to Messrs. Graves, Vane and Patch, as a committee to prepare a report. After deliberation, they reported that with proper drainage a good road-bed may be made of gravel, locomotive cinders, slag, or broken stone, either material to be used according to the cost at which it could be obtained in the particular section where it might be required. The report was accepted and placed on file.

NUT-LOCKS.

"The best nut-lock, with specimens," was discussed at some length by Messrs. Armstrong, Hardy, Shanks and others. The opinions were various as to the merits of the Pratt, Verona, Atwood, and other nut-locks, all coming in for a good word regarding their qualities. The committee on the matter, composed of Messrs. Kennedy, Hardy and Linsley, retired, and subsequently brought in a report recommending that the roadmasters make experiments with the two patterns most strongly presented—the Verona and the Atwood. The report was laid on the table. Some time after the report was reconsidered and amended so as to include the Pratt nut-lock in the experiments to be made, along with the Verona and Atwood nut-locks, the result to be reported at the next annual meeting. The report was subsequently adopted.

At 6 o'clock the Association adjourned for supper.

EVENING SESSION.

The Association reassembled at 7 o'clock, and Vice-President Kennedy occupied the chair at the request of President Burnett.

SWITCHES.

"Switches" were taken up for discussion.

Mr. Patch said the Wharton switch had been in use 14 years on the Connecticut River Railroad, and had given entire satisfaction. There were three or four Tyler switches on the line, which he would replace with Whartons as soon as the former were worn out.

Mr. Burnett said he had used what is known as the split switch successfully on the Rock Island Railroad. A White switch had been recently put in at Rock Island, and had worked satisfactorily thus far.

Mr. Keller, of the Chicago & Alton Railroad, said he had used the Wharton, the Clark & Jeffery, the Tyler and the Cooke switches, and the first-named was his first choice. He had used the Cooke switch and found it too heavy for yard use. He had put one in on the Atlantic & Pacific Railroad, where it had worked satisfactorily. He had used the Clark & Jeffery switch on the Chicago & Alton, where two bad accidents had resulted from them, and the General Manager had stopped their use. He thought the Wharton switch the most economical, but would use both that and the Clark & Jeffery switch, the latter being light and easy to handle.

Mr. Hardy said the Tyler switch had worked satisfactorily on the Boston & Albany Railroad.

C. H. Waring, of the East Tennessee, Virginia & Georgia, stated that a split switch, with a coil spring, had been successfully used in the yards on his road, and the Wharton switch had been in general use on the main line with good results.

Mr. Armstrong showed the manner in which he had improved a split switch, and they were made at the shops of the New York, Pennsylvania & Ohio Railroad, and met all the necessary requirements.

Mr. Canniff said the Tyler switch was in general use on the Lake Shore & Michigan Southern. He had seen the workings of the Wharton switch, and liked it.

The switch question was referred to Messrs. McDonald, Marshall and Vane, as a committee to prepare a report, and they retired for deliberation.

CURVE ELEVATION.

"Curve Elevation" was the next subject for consideration. Mr. W. Shanks stated that he would give an elevation of five inches to the outer rail in approaching a station, and he would begin the elevation about 300 ft. from the point of curve. His theory was that the inside rail should be depressed. He would allow a speed of forty miles an hour on an eight-degree curve with an elevation of four and one-half inches.

Mr. Spaulding said he would elevate the outer rail, but he did not know but that the depression of the inside rail would be as well.

Mr. Patch said that they followed one rule on the Connecticut River Railroad, and that was to elevate the outside rail at curves. The average elevation on his line was 4½ inches. He had recently elevated a 5-inch elevation to 4½ on a 7-foot grade, and found that the rear cars rode easier. On what is called their White Mountain train he lately rode three miles in three minutes and six seconds, around the curve on the down grade above referred to.

Mr. Armstrong said that he would not exceed six inches of elevation, and the speed of trains should be regulated accordingly. The approach of curves on his line—the New

York, Pennsylvania & Ohio—was fifty feet to the degree of curvature.

Mr. Hardy said that it had been decided on the Boston & Albany Railroad not to elevate more than four inches, and he had adopted a system of elevation that the speed of trains conformed to, and which he explained fully to the convention, the members frequently questioning him on technical and knotty points regarding curvature, which he answered in the plainest and most satisfactory manner. He said he had taken some valuable hints from the Roadmaster's Assistant, edited by Mr. Latimer, who also lucidly explained the system he had adopted. He said he would have a fixed rule in regard to elevation of curves. In his opinion half an inch elevation to the degree was the proper rule to observe. Elevation of curves should be made by a fixed rule, and not left to division roadmasters and section masters. Elevations should be such that the change of motion of the cars should be scarcely perceptible in trains running 45 miles an hour. He recommended roadmasters to go over their lines and see that the elevation of curves was uniform.

The subject was referred to Messrs. Burnett, Hardy, and Preston, to report upon the next morning. The convention adjourned at 10:30 p. m. to meet at 7:30 o'clock Friday.

FRIDAY'S SESSION.

The Association assembled at the early hour of 7½ a. m.

REPORT ON CURVE ELEVATION.

Mr. Hardy, in behalf of the Committee on Curve Elevation, submitted a revised report on curves and their elevation. The committee recommends:

1. That the limit of elevation of all curves should be five inches.

2. Changes of elevation on all old roads should be made by raising the outer or lower rail, as the case may be.

3. That the proportion of elevation at the tangent point to maximum elevation should be one-half.

4. That the rate of elevation on all curves, with speed at 35 miles per hour, should be three-quarters of an inch to a degree.

5. That in approaching a curve the rate in change of grade to get the necessary elevation of tangent point should be one inch to 100 ft.

The report was discussed at considerable length. Mr. Bower stated that he had had an experience of thirty-five years in road repairs. He wanted three-fourths of an inch to a degree. On his road they had fifty feet to an inch. He would maintain full elevation at tangent point, and that by depressing the inner rail.

Mr. Latimer believed three-fourths of an inch to be a good mean—was a moderate elevation, in fact; but he favored three-fourths of an inch on a six-foot gauge.

Very serious objection was made to the part of the report making the proportion of elevation at tangent point to maximum elevation one-half, and was amended by making the elevation three-fourths. Afterward the report was adopted and the committee discharged.

The subject of washers, or nut tighteners, was discussed. It was moved by Mr. Hardy that the Society experiment with the vulcanized rubber washers, and try any kinds that may be sent to them for use by the manufacturers.

Mr. Kennedy had tried the vulcanized rubber washer, had used it for six years in fact, but had taken no figures, and accordingly could give the Society but little information concerning its durability.

SWITCHES.

The Committee on Switches presented the following, which was adopted:

"We, the undersigned, report that the practical experience of the members present was more in favor of the Wharton and split switches as the most safe and economical. The committee, however, resolved to recommend no particular name of switch, but it should be the one that will come the nearest to an unbroken or continuous rail for safe passage of trains on main line and sidings."

RAILS.

The best kind of rail for road use received some consideration. Mr. Latimer believed the present rail in use was too light. Each road should have ties that would stand all liabilities to rottenness. They should be such as will stand without watching, and endure twenty years. He believed in having an 80—possibly 100—pound rail, and possibly an iron tie, well ballasted. In this country the roads were built too light. Like the monuments of old, they should be enduring. The present rails, Mr. Latimer said, were 4½ in. high; he urged that they be made 4¾ in., adding the quarter of an inch where the greatest wear comes, which is on the head.

Mr. Hardy, of the Boston & Albany, favored a large rail whenever it was most economical. Whether a rail should be made to last twenty years or not was a question for consideration. In twenty years the rolling stock of a company might be changed in weight so as to require a change in rails.

Mr. J. W. Wainwright, of the New York, Pennsylvania & Ohio, found that the great trouble with rails was in breaking at the neck; the head wore down, and then the neck broke. He believed in increasing the size of the head and stiffening the neck.

Other opinions were expressed by Mr. Armstrong and Mr. Shanks.

General business came next in order. As a means of circulating the doings of the present meeting Mr. Armstrong suggested that the proceedings be published in pamphlet form, which was agreed to.

On motion of Mr. Shanks, it was voted that a roadmaster in each state in the United States and in each province of Canada be appointed as a correspondent of the Society for that state or province.

The name of J. W. Wainwright, Assistant Engineer of the New York, Pennsylvania & Ohio road, was placed on the list of honorary members of the Association.

A vote of thanks was returned to the Mayor of Chicago, the City Engineer, the Western Society of Civil Engineers and to the proprietors of the Matteson House for kindness and favors received.

The Association then adjourned until the second Wednesday in September, 1881, to meet in Cincinnati.

A German Trial of an Engineman Charged with Causing a Collision.

In this country usually the only attempt made under the law to ascertain who has been to blame for a railroad accident is made by a coroner's jury, whose investigation is usually of the kind which cannot possibly find out anything, and whose judgment in most cases carries little weight and does not deserve to. So seldom is a serious attempt made here to ascertain exactly what was done or left undone that caused such accident, and who was responsible for the act or neglect, that a proper method of procedure in such a case is not established. As an example, which may be suggestive,

we translate below a report of the trial by a German court of a locomotive runner who had been indicted for causing a collision by negligence, which report we find published in the *Journal of the German Railroad Union*:

(Translation.)

On the 15th of August last year, mail train No. 8, leaving in the direction of Oberkotzau in accordance with the timetable at 4:40 a. m., collided with express train No. 3 leaving Oberkotzau at 4:35 a. m. for Hof, the latter being 12 minutes behind time. The collision was caused by express train No. 3 passing the block signal. The damage caused to rolling stock and materials, etc., was estimated at \$1,455; two passengers suffered from contusions and seven of the employees of the road were injured, none seriously.

According to the time-table, express train No. 3 should arrive in Hof at 4:35 a. m., while the schedule time for the departure of mail train No. 8 from Hof is 4:40 a. m., and the trains should therefore properly cross at the station. But as it would take express train No. 3 12 minutes to make the run from Oberkotzau to Hof, it would be 4:47 before the latter could arrive at Hof, and therefore, to avoid any delay to mail train No. 8, it was despatched by the officials on time (at 4:40), after having been duly signalled by the electric bells, and safety apparently insured thus and by placing the block signal attached to the end of the station grounds at "stop."

At the block, the lantern which did duty as night signal had been removed, and the day signal placed at "stop," as, according to the signal-man, it was already sufficiently light at four o'clock to render the semaphore (day signal) visible at the requisite distance. At the moment when train No. 8 was in the act of leaving the depot, a thick fog suddenly occurred, which so concealed the block signal as to make it invisible beyond two car-lengths.

Engineman Gesell, who was in charge of express train No. 3 from Nuremberg, expected that, in the fog that prevailed, the red night signal lantern would be displayed according to the regulations, and he consequently, as he asserts, proceeded over the 1,000 yards of inclined and 50 yards of level track that lay immediately before the block signal as slowly as was possible, but in consequence of the fog he only saw the horizontal arm of the semaphore block signal, the red lamp of which had been removed, when he had arrived within a distance of about two car-lengths of it. He sounded the danger signal and applied the counter-pressure steam at once, and put on the Heberlein's instantaneous brake and the tender brake. But the distance from the block signal to switch No. 3, by means of which train No. 8 was to reach the double track for departure, being only 85 yards, and mail train No. 8, which was also, by reason of the fog, only visible from train 3 when too late, being already in the immediate vicinity, a collision consequently occurred 76 yards from the block signal.

Express train No. 3 was made up of 14 coaches, the regulation number for express trains hauled by a B. IX locomotive being on this part of the line only 11. According to the instructions, one-fourth of the number of pairs of wheels, which in this case would have meant seven axles, should have been provided with properly manned brakes, but the number of axles actually served with brakes was in this instance 12.

In consequence of this accident the engineer of express train No. 3 was indicted for nine infractions of the law relating to bodily injury caused by carelessness, and for two breaches of the common law respecting the jeopardizing of railroad traffic. The relative legal proceedings took place on the 19th of April last before the royal district court at Hof.

The following is an abridged report of the proceedings: The accused, locomotive engine-driver Gesell, pleaded that the fog was so thick that it was absolutely impossible to distinguish anything. He bestowed his utmost attention on the line he was traveling over. Even on leaving Oberkotzau he told his assistants they should by all means take every precaution so that nothing might happen, as his load of 14 cars was a very heavy one. He had taken every care in approaching the block signal, but was only able to see it when within two car-lengths. It was also necessary to have had a preliminary signal, as train No. 8 was despatched ahead of its time.

He had left Oberkotzau at 4:31, and only took nine minutes to make the run to the block signal. He ran slowly; otherwise it would have been impossible to bring his train to a standstill within so short a distance. He gave in addition one stop and one danger signal.

The testimony of the witnesses then examined was throughout favorable to the accused, as they unanimously declared that engine-driver Gesell was well known as a careful driver; the train was run slowly, rather than at a high speed over the 1,000 yards of inclined track; the fog was so dense that in the absence of the lantern prescribed for thick fogs, on arriving before the block signal, it was first visible at a distance of about two car-lengths; the engine-driver, as soon as he was aware that the block signal was against him, used every endeavor to bring the train to a standstill, and with good results, as the train, in spite of the slipperiness of the rails caused by the heavy fog, was almost stopped when the collision occurred with train No. 8, that is, 76 yards behind the block signal, so that had the latter been placed at a distance of only 110 yards in front of switch 3, on which the collision occurred, no accident would have happened; finally, that the operating department at Hof acted contrary to instructions in not informing the station officials at Oberkotzau, for the benefit of the chief conductor and engine-driver of the train, of the projected crossing.

The subjects on which opinions were asked from the experts who were called in, and among whom were engine drivers and master mechanics from the principal railroad operating departments, the directors of the Bamberg chief railroad bureau and a professor of the school of industry at Nuremberg, may be gathered from the following points:

1. Is Hof a crossing station, and if so why was not the crossing awaited there; or, according to §§ 670 and 673 of the train regulations the previous station, Oberkotzau, notified by telegraph?

2. In consideration of the dense fog, ought the block signal to have been provided with the red light; in other words, was engine-driver Gesell justified in expecting that if the signal had been against him the red light would have been displayed?

3. Was the block signal placed at too short a distance from the switch which carried the trains from the common track leading into and out of the depot on to the double track (switch No. 3); if such were the case, how great should this distance have been if the signal had been properly placed?

4. Should not the signal have been so placed as to have been visible to the engine-driver of a train approaching the depot from his proper place on the locomotive, i. e., from the right side? It is well known that the signal on the old depot here concerned was on the left-hand side.

5. Did Gesell drive quickly or slowly up the incline of 1 in 100; in either case, how can a correct opinion be formed? What ought Gesell to have done on finding that in consequence of the thick fog he was unable to see the block signal at the prescribed distance? On finding himself unable to determine properly to what point he had brought his train,

should not Gesell have halted and endeavored to find the block signal?

6. What is the record of Gesell's service qualifications?

The points were first answered by the chief railroad directors to the effect that Hof was unequivocally a crossing within which such trains as were admitted by the block signal should properly cross those leaving the depot. In addition, Hof was the terminus of the double-track line from Untersteinach to Hof, and as such was protected by the block signal.

On double-track lines there are no crossings of trains, and therefore no crossing difficulties as on a single-track line; each direction has its own track, the trains from different directions meet and pass, but do not cross each other. As the double track reaches to the entrance of the depot at Hof and extends for some thirty yards beyond the block signal, trains from Oberkotzau may proceed without danger up to the block signal, the position of which will tell them whether or no they can run right into the depot.

Telegraphic understanding with the first station, Oberkotzau, with reference to the advisability of making a crossing, according to §§ 670 and 673 of the train regulations, is not necessary, where, as in Hof, the train cannot run into the depot, but must wait until the block signal is favorable; indeed, such a proceeding would be likely to impair the value of the block signal and might even be attended with serious consequences. Suppose, for instance, that after the institution of the system of crossing orders, the engineer should receive no crossing order in Oberkotzau, and approach the depot without diminishing his speed. In case of a fog like the present, where the engineer could not see the block signal at the proper distance, he would be apt to imagine it open, not having received a crossing order. He would be likely, therefore, to approach the signal at such a rate of speed as to produce the possibility of his coming to a standstill at the signal, if, in case of a delay in the dispatch of the departing train that had occurred after his leaving Oberkotzau, it should have been placed against him. In such a case the giving of a crossing order in Oberkotzau might be the very cause of what it was intended to prevent.

The engine-driver, according to his instructions, must unconditionally halt before the stop signal, and § 615 even contains directions as to what he should do in case he cannot see the signal at the proper distance. The directions read that in such a case he must proceed so slowly that on recognizing the signal "entrance closed," he is able to bring his train to an immediate halt. In the whole working instructions there are perhaps no plainer directions than those referring to the block signals.

Express train No. 3 was already at Nuremberg 12 minutes behind time, but the engineer had made up six minutes by the time he reached Neuenmarkt, but lost on the following incline (1 in 40) four minutes, and in Stammbach, where the auxiliary locomotive had to be detached, two minutes, so that he was again 12 minutes late on reaching Oberkotzau. No blame can be attached to Engineer Gesell for this delay.

In consideration of this delay, the operating official at Hof must have been aware that express train No. 3 could not arrive at their station before 4:47, while mail train No. 8 ought to leave at 4:40. As it is one of the chief responsibilities of the operating officials to secure the punctual despatch of trains by every possible means at their command, he was quite justified in coming to the conclusion that express train No. 3 would be delayed but little, if at all, at the block signal to allow mail train No. 8 to pass, and in acting as he did, i. e., in sending off train No. 8 on time after notifying the train-hands by means of the proper signals and closing the block signal. It was all the more important in this case to guard against any unnecessary delay of mail train No. 8 on account of such a delay being continued to Eger; six minutes after the arrival of mail train No. 8 in Oberkotzau, mail train No. 19 should leave for Eger.

With regard to Point 2 the experts declared that in the case of such a fog as was admitted by the Court to have prevailed, according to the instructions the red light should have been displayed, and that Gesell was therefore justified in coming to the conclusion that the red light would be displayed if the signal were against him. The experts further remarked that Wendler (the block signal-man) only took off the red light a short time previously, as it was already light at that time; instead of if he placed the block day signal at "entrance closed," that is, the arm of the semaphore in a horizontal position. As the bell signal sounded that informed Wendler (block signal-man) that train No. 8 was leaving the depot, and that its crossing with train No. 3 would occur beyond the block signal, he went to switch 3, which he set to carry mail train No. 8 over to the departure side of the double-track line. At this point, according to Wendler, the fog suddenly arose and drove in banks over the block signal; this was the very moment when mail train No. 8 was approaching him on one side and express train No. 3 on the other, so that it was out of the question for him to think of running back and hoisting the lantern; he was obliged to confine himself entirely to giving the danger signal with his horn. Every effort was then made by both trains to avoid the collision, but the distance was too short. Accordingly no blame for the collision can be attached to signal-man Wendler.

With regard to Point 3, it was declared by the experts that there is nothing in the regulations to determine the distance from the depot at which the block signal should be placed; it was purely a local issue; but it must at any rate be so far removed from the depot as to cover that part of the track used for standing cars and making up trains. As trains were not made up beyond the block signal on the old depot at Hof, the position of the signal was not an incorrect one.

Had the signal been removed any further it would have come on the incline of 1 in 100, and as the mechanical experts had explained that on such an incline it would be very inconvenient to come to a standstill on account of the difficulty of starting again, a removal of the signal to a greater distance was therefore impossible. To the remark of the defence that this might have been remedied by removing the switch farther back toward the depot, the experts explained that this was also impossible, as thereby the useful portion of the track would have been curtailed and the station was already not large enough; indeed, since then a new station has been built and was occupied on the first of last month.

The defence remarked that this showed a defective construction of the station for which the officials were responsible.

With regard to Point 4, the experts explained that this question was also decided by the nature of the locality, and for this reason the block signal might be found at different stations, now on this side now on that.

The proper side to place the block signal was that from which it was furthest visible. As a rule, the engine-driver could see the block signal from his post on the locomotive even if it were placed on the left-hand side, and at any rate he would only have to take one step from his own to the side of the locomotive occupied by the fireman.

Point 5.—The experts determined that it was impossible to prove that engine-driver Gesell had curtailed the regular time of travel between Oberkotzau and the block signal. Such proof could only be furnished if the chief conductor, who entered the time of departure from Oberkotzau accor-

ding to his railroad watch in his time schedule, had again entered the time immediately after the collision. This was not the case.

The expert further remarked that Gesell had evidently run towards the signal at too high a rate of speed, the proof resting in the fact that he had passed the signal, whereas he should have driven so slowly as to have been able to stop at the signal unconditionally, even in the case of a fog. While they were willing to grant that on perceiving the signal, that is on arriving within two cars' lengths of it, Gesell had done everything possible to arrest the motion of the train and with the most successful results, and while they were also willing to acknowledge the difficulties caused by the thick fog obscuring the block signal and rendering the rails slippery, they at the same time held that the rule that the engine-man is to proceed so as to be able to stop his train before reaching the block signal was absolute. On finding himself in a state of uncertainty with regard to the block signal he should have run still more slowly or come to a standstill, in spite of the probability that he might have to move backwards or even run back on to the level track of the new depot in order to start up again and make his station. This backing down is often known to have occurred to freight trains which have stopped, especially where they have to start again on an up grade.

With regard to Point 6, which concerns engine-driver Gesell's personal reputation, the experts testified that he has been always known as a competent servant, and according to his personal record had been twice commended for carefulness.

The technical engineer experts unanimously answered with regard to Point 1, that Hof is a crossing station, and that when a crossing is made between Hof and Oberkotzau on the double track the officials at Oberkotzau should be notified by telegraph, as is the case with every ordinary crossing, so that the conductor or engine-driver should there receive his proper crossing order.

The engineer experts declared with reference to Point 2, that in consideration of the thick fog at the block signal the red lamp ought certainly to have been displayed, and that Gesell was perfectly justified in his conclusion that if the entrance to the depot were closed he would see the red light at the block-signal. The absence of the red lamp was the chief cause of the accident. With regard to the distance signal, which Gesell expected, one expert and witness (an engine-driver attached to the Hof depot), testified that such a signal had previously existed but had been latterly removed. It was shown afterward, however, that this was an error, arising from a mistake respecting a signal post that formerly stood in advance of the block signal and was used to regulate the traffic over the switch used by locomotives and construction trains running between the old and new depots, but which had not been employed since the business of the road was transferred from the old to the new depots.

With regard to Point 3, it was the unanimous opinion of the technical engineer experts, that the block signal stood too close to the switch; between the block signal and the crossing from the single to the double track there should have been an intervening space of at least 110 yards.

They held that, as far as the fourth point was concerned, it were better if the block signal were placed on the right side, i. e., the side of the locomotive in which the driver stood.

It was the unanimous opinion of the technical engineer experts that Gesell had approached the block signal as slowly as was possible under the circumstances, and besides, it would have been impracticable to have halted the heavy train on the incline of 1 in 100 with the slippery state of the rails that prevailed, and that altogether Gesell could not have acted in any other manner than he did. As soon as he saw the block signal, that is, when he was only two car-lengths distant from it, he used every endeavor to reduce the unavoidable over-running of the block signal as much as possible, but in consequence of the short distance the collision was no longer to be avoided. Bringing the train to a standstill within 76 yards is sufficient proof in itself as to how slowly Gesell was running.

The remaining expert, the professor from the school of industry at Nuremberg, whose evidence principally concerned the question whether Gesell had driven slowly or not, after an explanation of the effectiveness of the Heberlein brake and the exhibition of a diagram showing the results of experiments lately conducted by practical men respecting the stoppage of trains in motion by means of instantaneous brakes, concluded that the stoppage of express train No. 3 within 76 yards absolutely proved a very low rate of speed, otherwise, such a result would have been impossible.

All the technical engineer experts testified with regard to Point 6, that Engineer Gesell possessed the best of reputations for trustworthiness and carefulness in his duties.

Hereupon the state's attorney based his demand for a punishment of one month and fifteen days imprisonment, while the defense pleaded for acquittal and the assumption of all costs by the public funds. Herewith the proceedings, which had occupied the whole day's session from 9 o'clock in the morning till 8 o'clock at night, with only a mid-day adjournment, were closed, and Monday, the 26th ult., fixed as the day on which the decision should be published.

On the last named day the decision rendered by the district court was published, and was in accordance with the demand of the defense, i. e., Gesell was acquitted, and all costs were to be defrayed by the state.

Convention of Railroad Claim Agents' Association.

On the 8th inst., the fourth annual convention of the Railroad Claim Agents' Association was held at the New Denison House, Indianapolis.

The following members were present: Chas. Knox, Wash. St. Louis & Pacific; T. H. Malone, Wisconsin Central; Samuel Ross, Pittsburgh, Cincinnati & St. Louis; Dade Sams, Green Line; T. E. Walker, Green Line; C. F. Shearer, New York, Pennsylvania & Ohio; E. G. Chadwick, St. Louis & San Francisco; W. A. Gatham, Central Iowa, and H. Walker, late of the Toledo, Peoria & Warsaw. The organization has a membership of forty, but owing to this being just in the midst of the heavy freight season, a large attendance was not expected. The meeting was called to order by Mr. Knox in the absence of President Olds. The annual report of the Secretary, H. Walker, was then read, which showed the organization in a flourishing condition. After some discussion the following rules for the guidance of members were adopted:

"Whereas, The necessity for a uniform system in the settlement of claims has been a want long felt, it is hereby

"Resolved, That the following rules be embodied in the minutes of this meeting, and that copies of the same be forwarded to the general freight agents of the various railroad corporations of the United States and Canada, with the request that they carry out the rules and regulations herein set forth, or advise the Secretary of the Association of any objections that they may have to so doing:

"1. That a bill made out by the claimant must be attached to a claim when presented for investigation.

"2. That the original or duplicate bill of lading and original expense bill must accompany a claim for overcharge.

"3. That the original bill of lading, expense bill and invoice or copy of invoice certified to by railroad agent, must ac-

company a claim for damage and also for loss, when a portion of the shipment only is lost; when the whole shipment is lost the original bill of lading and invoice or copy of invoice, certified to by railroad agent, must be furnished.

"4. When the open rate is less than the printed tariff and an overcharge is the result, original expense bills are not necessary in settlement of such overcharge.

"5. All claims should be recorded in the name of consignees.

"6. If freight is found to be short or damaged in a car which arrives at destination with the forwarding seals intact, the claim, if any, should be prorated on an earnings basis.

"7. That all roads should keep a record of locks, seals with their marks, and other fastenings on cars when receiving from or delivering to connecting roads.

"8. When the evidence collected in a claim is in itself positive proof of an attempt at fraud, and to obtain money, or its equivalent, under false pretenses, it is desirable that the railroad company upon which such an attempt is made prosecute such person or persons to the utmost limit of the law.

"9. A receipt or voucher signed by the claimant should be attached to a claim when forwarded to a connecting line for collection.

"10. That railroad companies should use all dispatch possible in the handling of any and all claims.

"11. That acknowledgment of receipt of claims should be made in all cases, giving the claim number of receiving road.

"12. All roads are requested to stamp the original bill of lading and expense bill connected with a claim as soon as voucher is made."

After some further debate the following was unanimously adopted:

"Resolved, That this Association, recognizing the importance of prompt adjustment of claims, not only with claimant, but also between the several roads interested, do recommend the consideration by our superior officers of the following plans for the settlement of reclamations:

"1. The claims, having been properly located and authority to charge the roads interested obtained, should be settled by the road to whom presented, and the proportion due beyond said road be charged to their immediate connection, to be followed thirty days after statement is sent by draft for the amount of statement of claims rendered, provided five days' notice of draft be given in advance. Or the following:

"2. Each road to furnish monthly statement of claims authorized by connections and exchange vouchers, to be followed on five days' notice with draft for balance, after same shall have been ascertained and acknowledged.

"We recommend that the delegates to the next meeting be instructed or empowered to vote upon these propositions.

"Resolved, That section 8 of the proceedings of the meeting held in St. Louis on Dec. 4, 1878, be repealed, and that the following be substituted therefor, viz:

"It is the duty of the claim agents to thoroughly investigate all claims for losses and damages; that when in the course of such investigation they have reason to believe that claims are fraudulent, the utmost vigilance be exercised by them, with the view of obtaining evidence sufficient to a successful legal prosecution of the fraud, and that a report of all fraudulent claims presented be sent to the Secretary of this Association, for the general information of its members, giving names of the claimants, their business, the nature of the claim, and the final result of the investigation.

"Resolved, That this Association recommends the more general use of consecutive numbers in the registry of claims and the acknowledgement of receipts, with exchange of registry numbers."

"Resolved, That we recommend for the attention of General Freight Agents the remittance of money received by agents for the purpose of prepayment of charges accruing to lines in connection and beyond the initial line be made only to the proper officer of that line for receiving such money, and that amounts accruing to connecting lines shall be plainly shown on the way-bills of the station from which the property is first billed; that the billing agent shall give in his way-bills to the receiving agent authority for re-charge against his station of such amounts as may have been collected by such billing agent for prepayment of charges beyond his own line.

"Resolved, That, with a view to curtailing the number of claims arising from the loss of grain doors, this Association would recommend to the attention of superintendents and general freight agents that they take such action as is necessary to enforce the return of grain doors from terminal points east. That local and terminal agents be instructed to look after and be held responsible for the grain doors in cars delivered at their stations."

The following interrogation, on motion, was made

"A shipment delivered to a connecting road in a sealed car, or receipted in good order and carried by them in local car not sealed, and freight delivered in apparent good order, and a shortage of contents afterward claimed, should the local line stand the loss on account of the absence of seals? That the answer of the general freight agents of the different roads be invited to this question."

There being no further business before the meeting, it adjourned to meet at the Grand Pacific Hotel, Chicago, on the second Wednesday in January, 1881.

Contributions.

The Effect of Rates on the Growth of Passenger Traffic.

NEW YORK, Sept. 1, 1880.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your paper issued Aug. 27, you have an article of great interest on the subject of "The Growth of Passenger Traffic" on railroads, and referring to and comparing it with the freight traffic of railroads, showing the enormous development of the latter compared with the former during recent years. I only wish to ask you to include in the comparison the progressive reduction of freight rates with the continued maintenance of passenger rates. Of course, I am aware of the fluctuation in passenger rates pending the frequently recurring railroad wars, but do not consider such events a material element of what I think is the real problem.

Passenger rates are as high now, generally speaking, as when freight rates were, for through freight, ten times what the roads are now glad to obtain, and in obtaining make more profit than ever. The reduction of rates for local freight has been also very marked, and with good effect.

I do not doubt that there will be a great increase in the volume and profit of passenger business on most roads when some one has the power and the nerve to establish properly a substantial reduction in passenger fares on a sufficient mileage of roads to constitute a proper example for others to

follow. No one can think of making such reductions universal, as there are lines of road in the country, mostly in the far West, that are now carrying passengers cheaper than even the trunk lines, if we take into account their location and surroundings. To illustrate what I mean, passengers can be carried on the New York Central Railroad to-day at a rate of one cent a mile more cheaply and secure a larger net revenue to that company from the business which that rate would create, than could be made from the enforced rate of two cents a mile when imposed on the company by the Legislature of the state.

D. T.

THE SCRAP HEAP.

Railroad Equipment Notes.

The Barney & Smith Manufacturing Co., of Dayton, O., has just delivered to the Baltimore & Ohio the first two of an order for 20 sleeping cars with which that company is providing its road, to take the place of Pullman cars, Oct. 1. They are said to be very elegant and comfortable. They are provided with the Loughbridge brake and the Janney coupler.

Jas. Harris & Co., of St. John, N. B., are building a number of cars for the Intercolonial Railway. Two second-class passenger cars and one mail and baggage car are nearly ready for delivery. They are of the ordinary American pattern and are the first of the kind ever built in New Brunswick. Six freight cars are also under way. This firm manufactures car wheels as well as cars.

Iron and Manufacturing Notes.

The production of the Stanton Steel Works for the week ending Sept. 4, was 2,720 tons of ingots, exceeding any previous week's work by over 166 tons, and said to be the largest production ever effected by two converters.

It is reported that Coffrode & Saylor, proprietors of the Philadelphia Bridge Works at Pottstown, in conjunction with the Hope Iron Company, will build a new foundry, or purchase that of William S. Ellis which adjoins the bridge works.

An effort will, it is reported, be made to start the Shawnee Rolling Mill, Columbia, Pa., very shortly.

The Chestnut Hill Iron Ore Co. is building a narrow-gauge track from the Shawnee furnace to the Pennsylvania Railroad siding near the Susquehanna Rolling Mill.

A guide mill has been added to the Penn Iron Works at Lancaster, Pa., for manufacturing merchant iron for railroad spikes.

A large number of men are at work on Robert W. Coleman's new furnaces at Lebanon, Pa., under the superintendence of Mr. Chas. B. Forney, who was for twenty years manager of the Coleman furnaces at North Lebanon.

The Laclede Rolling Mills, in St. Louis, have been filling some heavy orders for boiler plate.

Jesse Hall & Sons' rolling mills in Hubbard, O., will soon start up again.

Farral furnace, owned by the Pennsylvania & Virginia Coal and Iron Co., at Farral, Va., was put in blast Aug. 31. It produces about 15 tons of pig daily.

The Birmingham (Ala.) Rolling Mill Company have orders on hand sufficient to justify them in running double turn, and 500 hands are employed.

Alice Furnace, Birmingham, is approaching completion. It has a tier of coke ovens just behind it.

The Edgar Thomson Steel Company has made a contract for the privilege of removing brown hematite ore from 300 acres of land in Lemont, Centre County, Pa., and has the option to take the ore from an additional 300 acres. This ore is said to be almost free from phosphorus.

It is rumored that Cooper & Hewitt propose building a bridge across the Delaware River at the Durham Iron Works, the ferry being considered unreliable and inadequate for the transportation of stock and pig iron to and from the Belvidere Division of the Pennsylvania Railroad.

Prices of Rails.

Steel rails are a little more variable, and are quoted at \$62 to \$65 per ton for early delivery and \$57.50 to \$60 for next spring and summer. The Lackawanna Iron & Coal Co. is reported to have taken orders for 39,000 tons at \$57.50 at mill.

Iron rails are quiet at \$46 to \$50 per ton at mill, with little business reported.

Old rails are dull. Philadelphia quotations are \$26.50 to \$27.50 per ton. In New York sales are reported at \$27 to \$29.

Train Wrecking in England.

Very seldom indeed do we hear of attempts to wreck trains in England, the tracks there being much better guarded than here. The following telegram from London, dated Sept. 14, however, describes what appears to have been one of the most atrocious attempts ever made:

"Inquiry leaves little doubt that the placing of the package of dynamite under the rails of the London & North-western line was a deliberate attempt to wreck the express train to Scotland, which passed over the rails two hours previous to the discovery of the mine yesterday morning. There were twenty-seven dynamite cartridges, each about three inches long and one inch in diameter, connected with the rails by a rubber tube filled with powder and caps. The dynamite was soaked by the recent rain. No theory has been propounded to account for the attempt to wreck the train.

Saved from a Terrible Fate.

"In my judgment that little fellow is doomed," said a gentleman to his companion in a Long Island Railroad car yesterday. The train was on a side track, and the little fellow referred to was a potato bug crawling intently along the crest of a rail of the other track. "Yes," was the response, "when he encounters the down train he is apt to get considerably the worst of it." A black-eyed little girl heard these words and saw the bug, and her whole heart went out to the imperiled creature. "Oh, poor little thing," she said, "why doesn't it climb down? I wish somebody would shoo it off." The train was coming. "Shoo!" cried the little girl. "Oh, somebody make it get off the track! It doesn't hear and it can't see very far! It will be killed!" The words were almost screamed, and all the passengers in the car ran to the interesting side, expecting to see a frightful accident or a narrow escape. Had a human being been in danger the little girl couldn't have been more deeply concerned. "Oh, it knows!" she continued, while everybody struggled to look where she did. "See, it is getting off! I am so glad!" And, in fact, the bug, either by accident or seeing its danger did turn from its course suddenly, and when the locomotive wheels came up to it they merely shook it from the rail to the ground. "Oh, it isn't hurt, it isn't hurt!" the child sang, and, turning to a gentleman who had first noticed it, she asked what sort of a thing it was. And he replied somewhat louder than necessary, that it was a potato bug, and the passengers all resumed their seats.—New York Sun.



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EDITORIAL ANNOUNCEMENTS.

PASSENGER.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

ADDRESSES.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

ADVERTISEMENTS.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

CONTRIBUTIONS.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particularly as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

THE BROADWAY UNDERGROUND RAILROAD.

This scheme has now been before the public for so long a time that those persons who are not classed among the old inhabitants cannot remember the time when it was first proposed. Since then it has passed through a variety of transmigrations, and has been for many years the football of legislators and lobbyists at Albany. Recently, however, it has apparently been inspired with new life, and it now seems as if those in charge of the scheme intended to carry out the project. At any rate, it is hard to see why some of the gentlemen who have been named as officers and directors of the company should consent to such use of their names if it were not intended to do what it apparently is organized for. Many of the directors are prominent citizens, five or six of whom are or have been connected with the Erie Company either as officers, directors or attorneys.

The road is to extend from South Ferry along the eastern side of the Battery to Broadway and Bowling Green, and thence up Broadway under Union Square to Madison Square. The main line is to continue from this point under Madison Square and through Madison avenue to Forty-second street, which is as far as the route has been planned.

The great success of the elevated roads gives this project of an underground railroad especial interest, both as a question of engineering and from a financial point of view. It is intended to construct the road with two single-track tunnels, each 15 ft. high and 12 ft. 6 in. wide, which will run side by side under the middle of Broadway, below the water and gas pipes. The tunnels are generally to be arched, but at certain points, as at Canal street and at stations, when it is desirable to come as near to the surface as possible, the roof of the tunnels will be supported by iron beams. The stations are to be placed under the side-walks. The whole structure will be made water-tight by the use of hydraulic cement and layers of asphalt, so as to exclude moisture and thus keep the tunnel perfectly dry.

The great problem, though, with this road, as with

all underground railroads, is that of its ventilation. With reference to this, there are many popular delusions. When the question is propounded the usual answer is that the locomotives will be made to burn their own smoke. While this is quite practicable, even if bituminous coal is used, yet those who think that the whole difficulty may be overcome in this way forget that while the gases which escape from the fire may be made invisible, yet the more perfectly the smoke is consumed the more will the air be vitiated. Practically 225 cubic feet of air are required to effect the combustion of each pound of coal. The volume of this air is doubled by the increase of temperature in passing through the fire, so that for each pound of coal consumed about 460 cubic feet of vitiated air and gas would escape into the tunnel. Assuming that the locomotives have grates with 12 square feet of area, and that a pound of coal is burned on each foot per minute, we would have $12 \times 450 = 5,400$ cubic of vitiated air and gas delivered into the tunnel each minute by each engine. If the trains are run every three minutes, and at an average speed of 30 miles per hour, they would be $1\frac{1}{2}$ miles apart. In that distance, then, 5,400 cubic feet of vitiated air and gas would escape each minute. This, of course, would be mixed more or less with the pure air, so that probably to keep the atmosphere in the tunnel even tolerably pure, it would be necessary to exhaust at least double that quantity, or 10,800 cubic feet, from each mile and a half, or 7,200 cubic feet per mile per minute. Unless some special means are employed to prevent the mixture of the products of combustion with the air in the tunnel, probably a much larger quantity would require removal to maintain even a tolerable degree of purity.

An immense amount of money has been expended on the London underground roads to keep the air pure, and yet the frequent proposals in the English engineering papers, of methods of improving it, and the testimony of those who have traveled on those lines, indicate that the condition of the air is very far from what is desirable. The question of ventilation, then, is a very important one for the new company to consider before it constructs its subterranean line, and it would seem to be wise on its part to take counsel from any and all sources which may probably shed light on the problem. It should not be forgotten, too, that the ventilation of such a system of tunnels as is proposed will require not only the removal of some such quantity of air and gas as has been indicated, but a supply of pure air of nearly equal volume. Probably the most common error made in attempts at ventilation is that of exhausting air without providing means for admitting a corresponding amount. In the solution of the problem which the underground company has before it, there is, therefore, a necessity for the exercise of the highest order of skill. Certainly no prudent engineer would depend upon such questionable resources for the success of the project as the use of hot-water, pneumatic, or electric engines. While it would be rash to pronounce these absolutely impracticable, it would be more so to depend upon any of these for the motive power of the road.

Since the announcement of the formation of the new company there has been a good deal of speculation regarding the purposes of the line, and the supposition that the real instigator of the road is Mr. Vanderbilt, or that the company is building it for the purpose of selling it out to the New York Central Company, has been freely discussed. In fact it is hard to see how the road could otherwise be made successful. If built to Forty-second street only, it would be of very little use for the purpose of a rapid transit line. Above that the New York Central has a road already built that needs only an equipment of rolling stock to be ready to do a rapid transit business. The Broadway road would thus be of more value to this road than to any one else. If the Broadway company should construct its line to Forty-second street and then be unable to make a satisfactory arrangement with the owners of the present Fourth avenue road, it would have no other resource than to extend the underground northward to Harlem River. The cost of doing this would be so great that it is hard to see how it could be made to pay on the capital invested and at the same time compete with the existing elevated roads, which have cost much less than an underground line will.

But against the supposition that it is a New York Central scheme is the fact that none of the directors have any connection with that company, while the President and several directors are, or have been, intimately associated with the Erie.

The interesting question, though, of the relative merits of elevated and underground roads is certain to come up if the Broadway road is built, no matter into whose hands it may fall.

The elevated system undoubtedly has the advantage which light and pure air will give. On the other hand, there is hardly any limit on an underground road to the weight of engines and size of trains that may be employed. Increased speed is thus made possible, and passengers may be carried at less cost—if there are a sufficient number of them—than is possible on a road on which the engines and trains are limited to comparatively light weights.

On another page the first report of the President of the company will be found. This document rather indicates that the new officers of the company hardly realize yet the difficulties which are in the way of carrying out the project which they have before them.

RATES AND PASSENGER TRAFFIC.

A correspondent, whose letter is given on another page, commenting on our recent article on "The Growth of Passenger Traffic," intimates that the rapidity of the growth of freight traffic is due to the great reduction in rates, and that a similar reduction in passenger rates would be followed by a similar growth of passenger traffic, so that many roads at half their present rates could make greater profits than they do now from passenger traffic.

More than a year ago, in connection with an article by Francis J. Lee on local passenger traffic, we tried to set forth some reasons why it is harder to develop passenger than freight traffic, and found the chief one in the difficulty of making many classes in passenger traffic. If it had been necessary to charge substantially a uniform rate on all freight, that business, we believe, never would have been developed to anything like its present extent, and very little grain and not much provisions—the present great staples of east-bound freight—would be carried by rail from the West to-day: indeed, the West would have been twenty years or more behind its present position. Reductions of freight rates are almost never made "all around"; but article by article has its rate changed, as circumstances make it necessary or advisable. A road from New York to Buffalo, having established a general tariff, finds that under this tariff grain, for instance, will not use the road from Buffalo to New York, but only from local points where it has no other outlet so cheap. The managers of the road therefore, are led to make a special rate on grain from Buffalo, *without changing their other tariffs*, if the grain can be attracted by any rate whatsoever which will yield the company more than the addition to the expenses caused by carrying it. So with hundreds of articles from through and local points. The company risks absolutely nothing by making these specially low rates for traffic that it cannot otherwise get (that is, if they are made with due intelligence, so as to avoid destroying other traffic, and so as to more that cover the additional cost); for it has all its old traffic at its old rates. Often, doubtless, reductions in rates are made for the purpose of developing a traffic, so that the greater quantity carried at the smaller profit per unit may yield in the aggregate a greater sum; but here, too, each article is dealt with separately, and in each case, even if the result is doubtful, only a very small fraction of the company's earnings is risked.

Now, if we could classify passengers in the same way, and charge different people different rates according to the greater or less difficulty of getting them to travel, the case would be similar. We would start a train with seats for 800 passengers; fill 100 seats at $2\frac{1}{2}$ cents a mile, 200 at 2 cents, 200 at $1\frac{1}{2}$ cents, and 300 at 1 cent, and make a great deal more money than we do with 250 passengers at $2\frac{1}{2}$ cents a mile. That is the way freight trains are filled up: there may be flour at 20 cents a hundred for a thousand-mile haul, and merchandise at \$1.25 in the same car, not to say the same train, and nothing is more certain than that the road would lose most, if not all, of the freight it carries at its lowest rates if it had to charge its *average* rates on such freight.

In Europe a classification of passenger rates is made, but it is nothing like the classification of freights, first because it is a classification of rates and not of objects carried, and next because it requires separate accommodations for each class, and so adds to the complication and cost of conducting the traffic. We can carry first-class freight at \$1.25 a hundred, and flour at 20 cents in the same car; but you cannot put first, second and third-class passengers on a European railroad on the same seat, or in the same compartment. If we could classify people by their incomes or occupations, then the development of passenger traffic would be a simple matter, and we could very soon get everybody to travel so as to bring the maximum profit to the carriers. The man who travels all he cares to now would pay about the same as he now does. The man who travels little or none now because of the expense would have the rate to him lessened to any amount

whatever, over bare cost, that might be necessary to make him travel. But, as a general rule, we cannot do that, but have to charge everybody pretty nearly the same rate, and have to make that rate such as will yield the largest profit, as nearly as we can judge. Yet something is done in the way of attracting the people who will not travel at regular rates, examples of which are excursions of the most varied kind, commutation tickets, and the like.

That the profits of passenger traffic would be increased by a general reduction in rates we very much doubt. The traffic would be increased to some extent most certainly, but not as freight traffic is increased by reduced rates. As a general thing people do not make money by traveling, while they do by producing the freight that they ship. To make greater profits at lower rates there would have to be a very great increase in travel, in the gross expenditure for travel, and of the time consumed in travel, and not many people, except women and children, have the time to spare any more than the money. But if this result should follow and a very large amount more of money be spent in the country for traveling, it would amount to so much more "unproductive consumption"—wealth expended for pleasure and comfort, and not making any return in the form of new wealth; and this additional expenditure would have to be provided by economizing in other directions—buying cheaper clothing or less costly food or furniture, or something of that kind. We speak of this to show how very different activity in travel is from activity in freight movement. The latter is a step in production and will not be taken unless it increases wealth; the former is generally (not always by any means) wholly unproductive, and such additions to it as would be made by reducing rates would be to a still greater extent unproductive, because the increase would be comparatively little in journeys on business and the like.

All this we bring forward as evidence that a reduction in passenger rates would not be likely to be followed by such a great and progressive increase in traffic as has followed the reductions of freight rates of recent years, not at all as grounds for not reducing rates. It is not the business of the railroads to see that the people spend their money properly, and if they can make more money by charging a cent a mile for passengers, they should do it by all means, even if it should be followed by the ruin of tailors, milliners, distillers and others. Such things will take care of themselves.

To us it seems that the true and natural way to develop passenger traffic is to multiply the methods of drawing out special travel at special rates, which will be for the most part a pure addition to traffic, and by which very large train-loads may be secured. If we are asked to suggest some such methods, we shall have to answer that the problem is too hard for us, and that it will probably require a special solution, or several of them, on each separate road, which only those familiar with the road and the character, habits and resources of the people along it can be expected to arrive at.

Although there has never, that we know, been any great and general reduction of passenger rates made all at once on any considerable railroad in this country, yet the effect of temporary reductions during railroad wars, exhibitions, etc., ought to afford pretty good evidence of the effect of low passenger rates. It does not require as much time to develop passenger as freight traffic. If the rate on wheat from the Red River Valley to Chicago is reduced one-half, increasing very greatly the farmer's profits, not one bushel more will be shipped this year on that account. All the surplus wheat will be shipped in any event. If the reduction is made permanent, then there will be an increase in the area cultivated, in the quantity produced, and consequently in the amount shipped. But if the cost of a ticket from Iowa to New York or New England is reduced temporarily from \$30 to \$15, then thousands of people who had intended to make a visit to the old home next year or at another time in the same year may be expected to take advantage of the low rate, which will be only a transfer of traffic from one time to another and no increase; but then, also, many who much desired to go, but felt that they could not afford it at \$30, will afford it at \$15; and where only one member of the family would go at the full rate, two or three will go at the reduced rate, and so on, increasing the amount of traffic. A very large proportion of passenger traffic, and especially of that which would be added by low rates, is not limited to any special time, but can take advantage of a low rate at almost any season of the year. Now, so far as we can learn, very low rates during railroad wars, etc., have not usually resulted in an extraordinary increase of traffic. For several months last year the ridiculous rate of 50 cents

was maintained for a ticket from Kansas City to St. Louis, 280 miles. We have not any exact account of the effect on traffic, but we have been told by an officer of one of the roads that the passenger trains were not much larger than usual after the first few days. Yet this is a journey that a great many people might be expected to make. St. Louis is the nearest great city, standing to Kansas something as New York City does to Western New York, or, to put it in a form more agreeable to Chicago, much as Philadelphia does to Western Pennsylvania.

Nevertheless, doubtless there are many places and very likely some entire railroads on which passenger rates may be reduced materially with advantage. We suspect that this may be the case on many short roads and branches where the people are generally quite poor, and actually travel very, very little, and where rates are high. It is almost always better to carry at low rates than not to carry at all; the question in each case is whether a traffic can be created by low rates.

There is no doubt that the European practice of making three or four classes of passengers enables the railroads there to supply some public needs much better than is done here; but it is not so certain that the railroads profit much by it. The complication induced by the multiplication of classes adds to the expense apparently as much as, and in some cases more than, the difference between third-class fares and first and second-class fares, so that if the railroads could compel all their passengers to travel third-class at third-class rates they might make as large profits. It does not seem probable that there will ever be any general classification of this kind in this country; but it is extremely desirable that some way should be found to accommodate those who now want to travel but can't afford to travel, and who, though they will not pay for the cost of their transportation and a profit of half a cent a mile to be carried in average trains of 80 passengers, would willingly pay the cost and a profit of a quarter or a tenth of a cent a mile to be carried in trains of four or five hundred passengers. These people, no doubt, would make up a very large aggregate traffic. The trouble is to make such arrangements as will bring them out without destroying the profits on existing traffic to an equal or greater extent. This, it seems to us, is the problem of the passenger traffic manager, and he will need all his wits to solve it.

PREVENTION OF BRIDGE ACCIDENTS.

In the *Railroad Gazette* of June 25 and July 2, a communication was published from Prof. Geo. L. Vose, on "Bridge Disasters in America: the Cause and the Remedy." After reviewing the principal bridge accidents which have shocked the community during the last few years, and alluding to the instances of other structures—principally road bridges—built by incompetent or reckless contractors, which threaten to bring about like accidents in the future, Professor Vose referred to the efforts made by the American Society of Civil Engineers in 1875 to lay down a standard for the construction of safe bridges, and he then proposed a plan for a systematic inspection and for controlling the construction of bridges by an officer to be appointed by the state. His proposed plan may be epitomized as follows:

1. That each state shall appoint a single person, upon the nomination of the American Society of Civil Engineers, to act as inspector of roads and bridges, or State Engineer, paying him adequately and requiring him to give his whole time to the work.

2. That such inspector shall gather complete sets of the plans of every bridge of importance in the state, with all the computations of its strength, and a history of each structure from the commencement, the same to be the property of the state, and accessible to the public.

3. That no bridge shall be erected thereafter without first submitting the plans to the inspector, depositing with him a complete set of the drawings and computations for the work, and obtaining his approval.

This mode of inspection and of guarding public safety has some likeness to that which prevails in France and in Germany, where, however, the state engineers largely design the bridges which are erected on the common roads. It obtains also to a limited extent in England, where the Board of Trade has laid down certain rules for bridge construction, and has an engineer to see that they are observed, and where its consent must be obtained before a bridge is opened for traffic. It is doubtful whether the same system would be found to work well in the United States. Doubtless here, as elsewhere, an ounce of prevention is worth a pound of cure, but this paternal method is foreign to our American methods and ideas, and it is improbable that it would prove effective in practice. Profes-

sor Vose's plan seems fairly open to the following objections:

1. It would be very difficult to keep the appointment of the inspector or engineer permanently out of politics.

It is, of course, certain that the politicians would try to control the appointment for party purposes, and immunity from bridge accidents for a few years would give them an opportunity of doing so. The small compensation generally (and quite unwisely) paid by the states to experts would not make the position a desirable one for competent men, while even if the American Society of Civil Engineers consented to nominate a number of engineers for selection, this would be likely to be done in such a perfunctory way as to offer no real guarantee of capacity. The result would be at some time the appointment of incompetent inspectors.

2. If, through ignorance or favor, improper plans were approved by the inspector, the builders or owners of a bridge which broke down would feel relieved of responsibility. They reason that if the state assumes to determine in advance what constitutes a safe bridge, by passing upon the plans, then if those who build it carry out those plans in a workmanlike manner, they cannot be held responsible for its failure.

3. Bridges are almost always wanted in a hurry. It would be practically impossible for a single inspector at all times to examine and pass upon the plans as wanted. It might perhaps be done for entirely new structures, but it often happens that a bridge breaks down, or is discovered to be unsafe, in a distant part of the state; a design for a substitute is made by the engineer of the road, or by a bridge contractor, perhaps in another state, and then would begin a correspondence and a possible controversy with the state inspector, while the public would be kept waiting.

It is certainly desirable, however, that some plan should be devised of promoting greater safety. We ought not to go on longer with the present no method, and some safeguard should be provided for the public against incompetence or recklessness in bridge-builders.

On the other hand, care must be taken not to hamper builders in securing the best economical results, or abridge in any way that competition in design, in shop practice, and in erection, which has brought about such wonderful advance in our iron bridge-building during the last fifteen years, and placed our practice, as our own and many foreign engineers think, in advance of that of other nations.

At present the law gives to persons injured recourse against the owners of a bridge which breaks down. This has generally prevented the erection of insecure bridges by large corporations which are peculiarly responsible and have large interests at stake; but it has not been found to work well in the case of towns and rural districts, whose public authorities are not infrequently both uninformed and niggardly. They have authorized the erection of a large number of cheap bridges, some of which have broken down, and many more only await the combination of a number of unfavorable circumstances to do the same.

The main difficulty in the way of a reform lies in placing the responsibility for bad design and workmanship, while leaving the builders sufficiently free to secure the best economical results.

The law might provide that in case a bridge fails hereafter, the fact that its proportions and workmanship were not in accordance with some legal specifications, to be drawn up and published, should be *prima facie* evidence of negligence on the part of the builders, or of the owners, or of both, and punishable by public prosecution, without prejudice to the civil remedies of the parties injured. Or we might simply provide legal specifications of what should constitute a sufficient bridge, and leave the courts to deal with each case as it may arise. If once a standard were established, the law-makers might find some better way of compelling those who build bridges to conform to the standard.

In any case, the first thing that seems to be needed is a set of detailed specifications, prescribing the loads which shall be provided for, the strains which may be imposed on various kinds of materials, the quality and character of those materials and the workmanship and mode of manufacture of wooden, iron or steel bridges. These specifications would need revision from time to time, to make them conform to the best current practice and progress in the art of bridge-building.

There need be no difficulty in providing such specifications for railroad bridges. Prompted by the large interests at stake, our leading railroads have secured the services of able engineers, who are substantially agreed as to the requirements of a safe bridge, and the specifications of the Erie, the Cincinnati Southern, the

Chicago, Milwaukee & St. Paul and other roads furnish excellent models, which may be followed.

The great difficulty will be to draw up detailed specifications for road bridges, which, while providing for sufficiently safe structures, shall not waste capital and burden the public needlessly, by requiring stronger and heavier bridges than are really necessary.

There is in this respect need for the exercise of the most careful consideration, as well as of the best judgment, and it is in this class of work that the recklessness of incompetent builders has had the freest swing.

The work that most needs to be done to secure the erection of safe bridges is the drawing up of detailed and careful specifications for safe bridges, which may receive the sanction of the law. Such service, to be well done, must be paid for, as it cannot be expected that either the American Society of Civil Engineers or our best bridge designers will give gratuitously so much of their time and thought as is required for perfecting the elaborate specifications needed.

Some one state must take the initiative, make an attempt at effective legislation, trusting to the others to follow in good time. Naturally either Massachusetts or New York might be expected to take the lead in such legislation.

It is, therefore, suggested that the next New York Legislature pass a bill appointing a paid commission, to consist of say one or two civil engineers, a constitutional lawyer, an intelligent farmer or other citizen and a railroad manager, to investigate the whole subject, and to report to the next Legislature:

1. Complete sets of bridge specifications, both for railroads and for common roads, which shall provide for safe structures, whether of wood, iron or steel.

2. What legislation on the subject prevails in other countries, and what is mostly likely to prove effective in enforcing the observance of such specifications.

If such a commission were authorized to summon witnesses and take testimony and then publish a complete report on the whole subject, it would have the very important result that the most complete and the latest information on the subject would be put into an accessible form for the guidance of future legislation. The subject is certainly important enough to merit thorough discussion and investigation.

Foreign Railroad Notes.

The Prussian Ministry of Public Works has given instructions that in the case of every railroad accident there shall be a strict inquiry into the causes of it, it being the intention to increase safety on the basis of the experience so obtained. Already it is claimed that considerable progress has been made, especially by the improvement of rolling stock. Except in the accidents caused by failures of wheels and tires, there has been a constant decrease for some years in the number of accidents due to defects of rolling stock, and axle breakages especially, which formerly were quite common, have become comparatively rare. The train service also has been improved by uniform regulations for the German Empire, issued in 1875. A good influence especially has followed the introduction of a uniform code of signals, replacing the variety used before. Accidents likely to attract official attention, with which are counted those by which persons are killed or injured, or considerable damage done to cars, those occurring to trains in which princely personages were traveling, those which are likely to interrupt the regular passage of trains over a main track for twelve hours or more, considerable fires, boiler explosions, etc., are to be reported to the Minister by telegraph immediately, and a full written account must follow. Inaccurate newspaper accounts of accidents must be corrected immediately by the managements, and it is suggested that it would be well to volunteer an official account of an accident to the official newspapers, in order to prevent any incorrect report.

This seems to be the era of railroad investigations. We noted one in Russia recently, which in the matter of fulness of reports seemed likely to surpass all its predecessors. But there is one now in progress in Italy which covers nearly the whole field of railroad construction, operation and policy, and has lasted a year and a half already. The proceedings of the first 42 public sessions have been published, and fill two large volumes. The great variety of matters investigated will appear from the following statement of the proceedings of three days: An engineer spoke of the employés, especially those in the train and station service, and of a school for the instruction of such employés which he had established in Rome. A citizen spoke of the need of special cars for oil of vitriol, petroleum, etc., and complained of the many thefts from the freight cars, and expressed his preference as to the way rates should be made. Another spoke of the construction of road and rolling stock, and also of the tariffs. Another complained of the complexity of the tariffs and wanted them uniform. He thought a state railroad system would be better worked, but more costly, than a system worked by companies. An engineer complained of the method of heating cars, and discussed the various brake systems.

There have recently been built at a factory in Bohemia a pair of palace cars for a Russian railroad officer that seem to deserve the name. They are on trucks, like American cars, and about 53 ft. long, with entrances at the ends. (The cars

belong together.) One has a kitchen, with sleeping accommodations for the cook, a buffet room finished in carved ebony and supplied with elegant table ware, and finally a dining-room, finished in beautiful woods, with antique carved chairs for twelve persons, an elegant extension table, and lighted with a central chandelier bearing 25 wax candles, besides four other lights. Berths can be made up in this room also. In the connecting car is a bath-room provided with hot and cold water, a Field boiler heating the water for this and for warming the car also. There is a passage along the side of the car, from which open, in order, a nursery, a music-room, a bed-room and an office room, all connected by an annunciator and speaking-tubes with the servants' quarters. In the nursery is a child's bed, with drawers underneath for linen, and a berth opposite for the nurse, with a closet at one end. The music room is reported to be fairy-like in its beauty, with purple carpets, curtains and arm chairs, with an ebony piano on one side, and on the other an elegant *fire-place* in the French style, in which, in winter, a cheerful fire adds to the steam heat which warms the other rooms of the car. There is also in this room a carved wardrobe carrying a chronometer, a round table of ebony and a chandelier, while the ceiling is hung in white satin gathered in the centre with a golden rosette. The bed-room is hung with dark-blue damask, and the bed on the gilt French bedstead is covered with sky-blue satin, and shaded by a canopy held up by gilt hooks. The velvet carpet and the chairs correspond.

The curtains are bordered with fine lace (what a chance for sparks and cinders!). The walls as high as the bed are hung with dark blue velvet. This bed-room opens into a toilet room provided with every convenience, including a water-closet. The office has a dark carpet and hangings, and is provided with a simple walnut cylinder desk. Noise is reduced by thick carpet and hangings. Adjoining is a little room with a sofa and a mirror in a carved oak frame over one end, so arranged that when the car is at the end of the train one may lie on the sofa and see in the mirror the reflection of the country which the train has just passed. It is said that these two cars are for the private use of Mr. Von Meck, the President of the Libau & Romy Railroad Company, and they bear his initials. Whether he or the company paid for them is not stated.

At the beginning of 1880 there were 14,020 miles of railroad in operation in the Russian Empire, an increase of 371 miles within a year. The aggregate earnings in 1879 were about \$156,000,000, but these are reported probably in the depreciated paper currency of Russia.

At the recent convention of the German Railroad Union, a report was adopted by which hereafter only children three years old and under will be carried free, and of these only two to one accompanying adult. Children from three to ten years of age will be carried at half price in all classes and trains, and will be allowed 27 lbs. of baggage. This half-fare rate in the fourth class is less than half a cent a mile. Only a little while ago the Prussian state railroads had made a rule allowing children of four and under to ride free.

At the same convention the question came up whether the conductors of parlor and sleeping cars should be made to pay fares on roads to which the car does not belong. It was decided that one attendant with each car should be passed free.

The Belgian government has determined to appoint a commission to investigate and propose the means requisite to the extension of a system of cheap railroads in that country. On this commission there will be appointed senators, representatives, state railroad officers, directors of railroad companies, economists, etc.

The International Congress of Science and Industry holds a session in Brussels this month, and the management of the state railroads has agreed that members of the Congress shall travel at half price, and the managements of several foreign railroads are said to have done the same thing. We do not remember to have heard of a similar instance in Europe before.

Heretofore in Europe it has been the practice to excavate tunnels wide enough for two tracks even where the prospect of needing two tracks was very remote. Recently, however, the Prussian state railroads have had many single-track tunnels constructed, and a considerable number are now under way. It is said that there are now on certain Austrian railroads of subordinate importance some eight miles of double track tunnels where a single track is entirely sufficient, and there is still more in Prussia.

Mr. P. F. Kupka, of Vienna, has contributed to the journal published by the Austrian Railroad Club a *résumé* of the proceedings of the American Master Mechanics Association last year, with an illustration of Mr. S. J. Hayes' boiler-washing apparatus.

Chicago Passenger Stations.

A telegram from Chicago says that "it is now practically settled that the Chicago, Burlington & Quincy Railroad Company will transfer the road's place of entry into Chicago from the lake front depot to the new union depot on West Side." The road enters the city from the west and after crossing the South Branch of the Chicago River at Sixteenth street continues due east a little more than half a mile to the lake shore, and then goes due north over the tracks owned by the Illinois Central and used also by the Michigan Central to the foot of Lake street, a distance of about 1½ miles, and then the three roads have a union depot generally called the Central Depot. This building was burned in 1871 and never has been rebuilt. The three roads using it needed more ground to the south, which is owned by the city, and agreed to construct a large and fine structure if they could get this on reasonable terms, there not be-

ing room for them on the old ground, which the river and the lake limited on the north and east, while to the west the land is occupied by costly stores, etc. The union depot on the west side referred to is that now under construction by the Pennsylvania Company for the joint use of itself, the Chicago & Alton and the Chicago, Milwaukee & St. Paul, on the South Branch just south of the Madison street bridge. To reach it the Burlington will have to turn north from Sixteenth street west of the river, that is, a little more than half a mile west from where it turns on the lake shore, and as the new station is nearly a quarter of a mile farther south than the old one, the distance will be lessened nearly a mile, more than half of which is across busy streets and railroad tracks at a level, where trains must run very slow. The lake shore depot was formerly decidedly the most convenient in town, the leading hotels and retail business being close by and the best residence quarters not far distant. But now the retail business has moved further south and west, and the residence quarters much further, and the west-side depot is nearly as central as the old depot, though perhaps not so convenient as a lake shore depot a few blocks further south would be.

The removal of the Burlington road will leave more room for the Illinois Central and the Michigan Central on the lake shore, but probably still not enough unless they can get the land which they have tried to buy from the city. The Burlington has always had its freight depot on the west side, at Sixteenth street, but the other two companies have theirs on the lake shore, and it is the growth of their freight traffic chiefly which requires more land. The site of their present passenger depot is admirably situated for a freight depot, though not so favorable as formerly for a passenger depot. Their passenger accommodations now are wretched, only the ruins left by the fire, with roofs and temporary provision for the most necessary purposes; but they have been hindered, and are still, by the impossibility of getting at once the land which they need, and which alone will answer their purposes well.

Since the fire Chicago has had but one respectable passenger station building—that of the Lake Shore and the Rock Island. All this is being changed now. Besides the great union depot now under way by the Madison street bridge just mentioned, the Chicago & Northwestern is constructing a fine one (which will take the place of the old sheds it is now using), on the site of its old Wells street depot, which is about as near to the centre of business as it is possible to get on the North Side, and a very convenient location indeed. With the Burlington provided for in the Madison street depot, together with the Pittsburgh, Fort Wayne & Chicago, the Pittsburg, Cincinnati & St. Louis, the Chicago & Alton and the Chicago, Milwaukee & St. Paul, with the new Northwestern and the old Rock Island and Lake Shore union depot, there will remain only to provide fitting quarters for the two Centrals, and a suitable station for the roads that will enter over the Chicago & Western Indiana, namely, the Grand Trunk, the Wabash, and the Chicago & Eastern Illinois.

European Passenger Rates.

The average passenger rates in the different countries of Europe are given as follows, in cents per mile, in a report to the French Parliament by Mr. Richard Waddington.

	First-class. Cents.	Second-class. Cents.	Third-class. Cents.
Norway.....	2.17	1.30	0.99
Belgium.....	2.32	2.08	1.18
Denmark.....	3.01	2.08	1.30
South Germany.....	3.10	2.14	1.30
Sweden.....	3.10	2.17	1.40
Greece.....	3.10	1.86	1.40
North Germany.....	3.10	2.32	1.55
Switzerland.....	3.29	2.32	1.67
Netherlands.....	3.29	2.64	1.64
Portugal.....	3.29	2.58	1.80
Italy.....	3.47	2.85	1.92
Roumania.....	3.47	2.70	1.74
Austria.....	3.78	2.85	1.92
France.....	3.81	2.87	2.10
Spain.....	4.03	3.10	1.92
Hungary.....	4.15	3.13	2.11
Great Britain.....	4.43	3.22	1.92
Russia.....	4.50	3.38	1.77
Turkey.....	6.01	4.40	2.91

It is evident that this does not give the average *receipt* per passenger mile, but only the *regular rate*. In some countries there are so many round-trip, excursion, commutation and other tickets at reduced rates that the average rate is much below the regular rate. This is so on many roads in England and also in Belgium, probably to a less extent in Germany, and still less in France.

It will be interesting to compare with these European rates the average rates actually received in some of our states on all passenger traffic, which is substantially all first-class, the number traveling on emigrant and second-class tickets being too small to change the average rate received appreciably.

Not many of the states report, but the following are examples:

	Year.	Rate.
Massachusetts.....	1878-79.	2.120 cents.
Connecticut.....	1878-79.	2.418 "
New York.....	1877-78.	2.354 "
Ohio.....	1875-76.	2.524 "
Michigan.....	1874.	2.520 "
Illinois.....	1878-79.	3.140 "

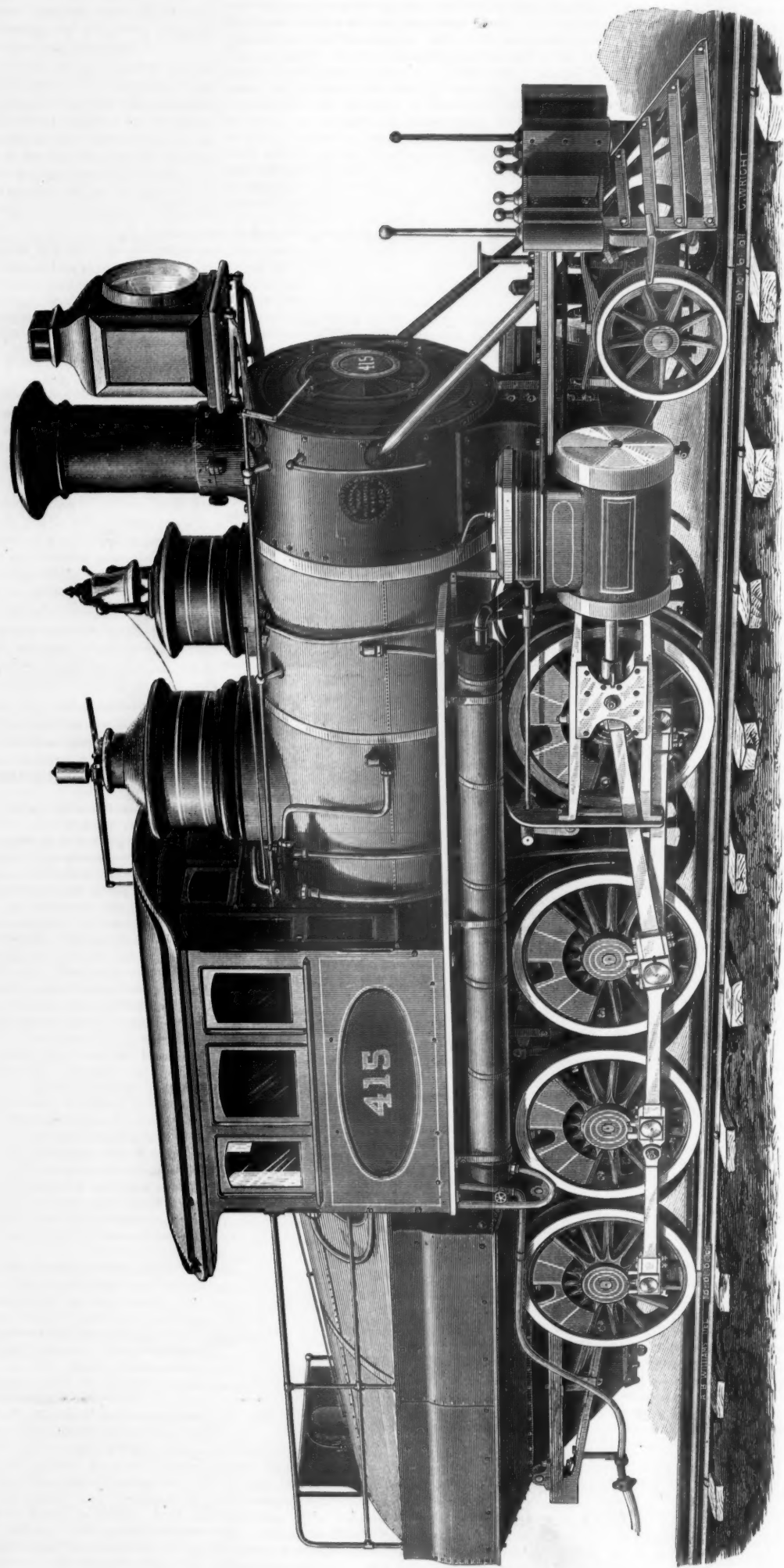
Except in Illinois the average passenger rate of these states is less than the lowest second-class rate in Europe. But probably there, as here, the average rate received was something less than the regular rate, which is given above, though not much.

Record of New Railroad Construction.

This number of the *Railroad Gazette* has information of the laying of track on new railroads as follows:

Nashville, Chattanooga & St. Louis.—The first track has been laid on the McMinnville & Manchester Extension, from





CONSOLIDATION LOCOMOTIVE, WITH WOOTEN'S FIRE-BOX FOR BURNING FINE COAL.

Built for the Philadelphia & Reading Railroad Company by the Baldwin Locomotive Works, Philadelphia.

McMinnville northeastward three miles to Collins River. *Fulton County.*—Extended southeastward seven miles to the Illinois River, opposite Havana, completing the road. Gauge, 3 ft.

Northern Pacific.—Extended from Green River westward 28 miles, to a point 133 miles west of the Missouri.

Vernon, Greensburg & Rushville.—The first track is laid from the Cincinnati, Indianapolis, St. Louis & Chicago road at Greensburg south by west 15 miles to Westport, Ind.

Wisconsin & Minnesota.—The first track has been laid, from the junction with the Wisconsin Central at Abbotsford westward 20 miles toward Chippewa Falls.

Tonawanda Valley.—The first track is laid from a junction with the Buffalo Division of the Erie at Attica, N. Y., south by west 19 miles to Currier's Corners. Gauge, 3 ft.

This is a total of 92 miles of new railroad, making 3,288 miles thus far this year, against 1,863 miles reported at the same time in 1879, 1,273 miles in 1878, 1,223 miles in 1877, 1,556 miles in 1876, 746 miles in 1875, 1,022 miles in 1874, 2,507 miles in 1873, and 4,623 miles in 1872.

THE MANHATTAN RAILWAY COMPANY has just given an order to the Baldwin Locomotive Works for 25 new locomotives. They are to weigh 18½ tons loaded, with 11×16-in. cylinders and 42-in. wheels.

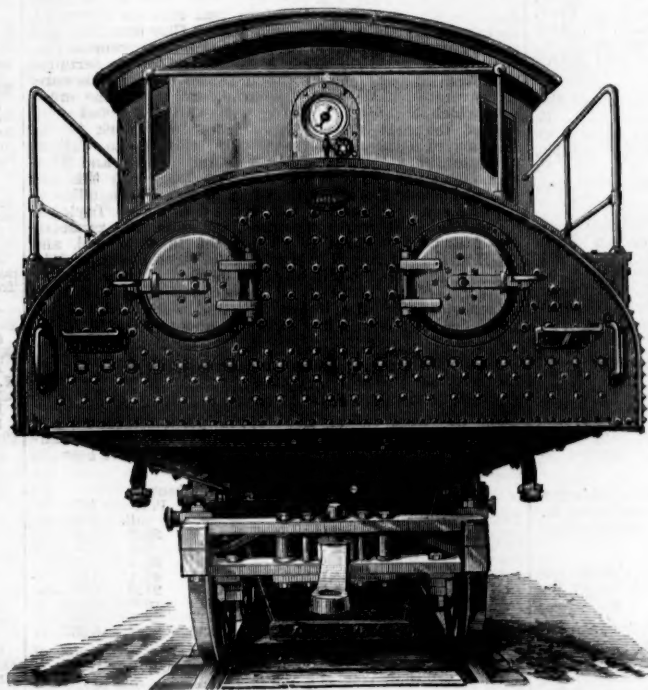
The first engines used on the New York Elevated road were small four-wheeled truck engines. After the construction of the Third Avenue line there was much difference of opinion about the best type of locomotive for the service of elevated rapid-transit roads. Some of the officers recommended very strongly the continued use of the four-wheeled engine, while others thought that an eight-wheeled engine of the "Forney" type would be more satisfactory. A number of experts were called in in consultation. These were also about equally divided in opinion, so that finally the directors concluded to order an equal number of engines of each kind. This was done, and a second order given in the same way. The third and subsequent orders for this line were, however, for eight-wheeled engines of the type named. The Metropolitan Company's roads, on the other hand, have been equipped with engines with a single pair of pony truck wheels in front of the four driving-wheels, and another pair behind them, and with a water-tank over the driving-wheels. Recently the General Manager, Mr. F. K. Hains, conceived the idea that the front pair of pony wheels was useless, and he made the experiment of removing them and running the engine without. The result was that the weight of the engine was reduced about 4,000 lbs., and its performance is in every way improved. It starts a train easier and quicker, curves better, and no difference in steadiness is perceptible. The water tank, however, still imposes a variable load on the driving-wheels. As a consequence of this experiment, Mr. Hains was led to the conclusion that an engine with a truck at one end only would be more satisfactory than the type at present in use on the Metropolitan lines. Instead of carrying the water-tank over the driving-wheels, it is in the new engines to be placed over the truck, and the latter is for this reason to be made with four instead of two wheels, which reduces the engines to the "Forney" type. It will thus be seen that this last order indicates that on both the New York and the Metropolitan lines—which are now, by virtue of the lease to the Manhattan Company, under one management—experience has shown that the plan of engine which is best suited to the traffic of these roads is that of the locomotives which have just been ordered from the Baldwin Locomotive Works.

THE INVESTIGATION OF RAILROAD ACCIDENTS seems not likely soon to be undertaken by governmental authority, either state or national, in this country; though if it could be done thoroughly and intelligently it would be very desirable. Even in cases where death has been caused by criminal negligence, there is very rarely any investigation which is of much value to those who are studying how best to avoid accidents. A coroner's inquest is only in very rare instances of any value whatever, and it does not even make the clear statement of the facts attending an accident which would enable a railroad man to form a judgment for himself, while in the nature of things it must be altogether an accident if its judgment is worth anything. And in the comparatively infrequent cases when men have been tried in the courts on charges of having caused accidents by criminal negligence, if there has been any valuable investigation, the record of it has usually not become public, or at least not accessible to railroad men, who would most profit by it. One thing, however, the railroads can do, and that is investigate thoroughly themselves the accidents on their own lines: and if for lack of power to subpoena witnesses and administer oaths they cannot do this with all desirable completeness, they can yet usually get at most of the facts and learn what dangers they have specially to avoid. To any who have such an investigation to conduct, whether public or private, the report of the trial of a German engineman which we publish elsewhere will be suggestive. The facts seem to have been carefully ascertained, and they were then submitted to the judgment of experts, whose qualifications covered several branches of railroad operation, and whose opinions therefore carried more weight than that of any single officer could. It is not

enough to bring an accused man and his associates before the superintendent to be questioned; something like a court may be organized in a railroad office, in which after inquiry into all the facts, the judgment of several experts would be rendered. We noted recently that the officers of the Prussian state railroads have recently been instructed to investigate all accidents, and to send in full reports of their investigations to the Minister of Public Works, all this being intended solely to ascertain how best the number of accidents and the amount of damage done by them may best be reduced. Something of the same sort may be done by our railroads, acting of and for themselves.

THE WHEAT CROP is evidently very large this year, but whether much larger than last year remains uncertain. The report of the Illinois Board of Agriculture estimates the winter wheat crops of the state this year to be 53,865,000 bushels, which is, we believe, a larger amount than the total wheat crop of any state in any earlier year, but may possibly be exceeded in Indiana this year. It is probably one-third more than the Minnesota crop this year. This crop is produced almost entirely in Central and Southern Illinois, and is not marketed by way of Chicago to the same extent as the produce of Northern Illinois, Northern Missouri and the country further north and west, but partly by way of St. Louis, and chiefly by through shipments by rail. However, the Illinois Central, the Chicago & Alton and the St. Louis Division (and some other branches) of the Chicago, Burlington & Quincy penetrate the winter wheat region and carry large amounts to Chicago, but also a good deal southward. Besides this immense winter wheat crop Illinois produces some spring wheat, almost entirely in the northern part of the state, where not much wheat of any kind is raised, and the state's product is probably only a few million bushels.

The Chicago Commercial Bulletin has collected statistics



BACK END VIEW OF CONSOLIDATION LOCOMOTIVE WITH WOOTTEN'S FIRE-BOX FOR BURNING FINE COAL.

of the spring wheat crop for the whole Northwest. It makes the aggregate crop of Illinois, Wisconsin, Minnesota, Iowa, Kansas, Nebraska and Dakota 147,731,000 bushels, against 126,466,000 bushels last year, an increase of 21,265,000 bushels, or just about one-sixth, which is certainly large. The average yield per acre is reported as 13.58 bushels, against 12.15 last year, or an increase of 11.7 per cent. This gives an aggregate average of 10,878,570 acres this year, against 10,408,724 last year, and the increase is thus 469,846 acres, or 4.5 per cent. Nearly all the new country except Kansas grows spring wheat exclusively, but on the other hand the tendency where both can be grown has been to substitute winter for spring grain, and this has probably decreased the spring wheat acreage in some of the older states. Most of the increase in the crop is due to the greater average yield, and not to the greater area sown. Even if we put the yield on the new acreage as much above the average as 16½ bushels per acre, its production was but 8,000,000, against a total increase of 21,000,000 bushels.

AUGUST EARNINGS, so far reported, make an excellent showing truly, but the increases are not quite so large on the average as in July. Of 31 roads that reported for July and August, 17 had larger increases in July. The cause generally is, not any falling off of earnings this August as compared with July, but the very considerable improvement last year of August over July. This is especially true of the few lines reporting that have any considerable earnings from through traffic carried at trunk-line rates, as the Cleveland, Columbus, Cincinnati & Indianapolis, whose gain was 19.5 per cent, in August against 24.2 in July; the Indiana, Bloomington & Western, 8.6 against 16.8; the New York Central, 18.7 against 30.5; the Wabash, 44.5 against 58.5; on the other hand the Toledo, Peoria & Western gains 24.4 per cent. in August against 8.1 in July. It needs to be remembered that the vast increases that we have become ac-

customed to for several months past cannot last forever. We have approached the time when earnings began to show great increases last year, and when 1879 showed an increase of 40 per cent. over 1878, if 1880 should show an increase of even 25 per cent. over 1879 it would be 75 per cent. more than the 1878 earnings.

WATER RATES, with the exception of canal rates, which have not changed, have fallen a little during the past week. Lake rates fell a quarter of a cent about Friday of last week, and since have continued at 3¼ cents a bushel for corn and 4¼ for wheat from Chicago and Milwaukee to Buffalo. Canal rates have been quoted throughout the week at 5¼ cents for corn and 5¼ for wheat from Buffalo to New York. Ocean rates, which were quoted at 5¼d. a bushel Wednesday of last week, by steam from New York to Liverpool, have been 5¼d. and 5½d. most of the following week, and to Glasgow shipments have been taken as low as 4¼d. and 4½d. Wednesday the New York-Liverpool rate on grain fell to 5d. and 4¾d.—the latter one-half the rate obtained about the first of August.

"SIGNAL-DEAFNESS" is a complaint that some German railroad men declare to be an infirmity that deserves to be classed with color-blindness, but much more common and dangerous. It is not, however, a congenital defect, but is produced by the very methods of the railroads, which in Germany give many acoustic signals simply as a notice that all is right, which the employees do not have to act upon; they thus become so accustomed to them that they are apt to pay no more attention to them than one does to familiar street noises, and are apt to exercise this "signal-deafness" by not attending to other acoustic signals which they should act upon. Alertness is cultivated only when the man's act is governed by the signal which he sees or hears. If it is, then his attention is awakened by every signal, and the longer he serves the closer his attention becomes.

Consolidation Locomotive for the Philadelphia & Reading Railroad.

The full-page engraving and the smaller view on this page represent one of the heavy freight engines recently built for the Reading Railroad by the Baldwin Locomotive Works, of Philadelphia.

These engines have the Wootten fire-box, for burning fine coal. Its construction is shown clearly by the engravings, from which it will be seen that it extends laterally over the frames and back pair of driving-wheels, so as to be 8 ft. wide inside.

The following are the principal dimensions of these engines:

- Cylinders, 20 in. diameter × 24 in. stroke.
- Driving-wheels, 50 in. diameter.
- Truck-wheels, 30 in. diameter.
- Driving-wheel base, 14 ft. 9 in.
- Total wheel-base, 22 ft. 10 in.
- Fire-box, 114 in. long × 96 in. wide.
- Smallest diameter of boiler, 56 in.
- 197 tubes, 2 in. diameter × 11 ft. 6½ in. long.
- Heating surface in tubes, 1,190 sq. ft.
- Heating surface in fire-box, 167 sq. ft.
- Heating surface, total, 1,357 sq. ft.
- Grate consists of water-tubes and cast-iron bars.
- Driving-wheel journals, 7 × 8 in.
- Truck-wheel journals, 5 × 8 in.
- Steam-ports, 16 in. × 1¼ in.
- Exhaust-ports, 16 in. × 2½ in.
- The boiler is fed by two No. 8 Sellers injectors.

Capacity of tank, 2,800 gallons.

Diameter of tender wheels, 30 in.

Journals of tender, 3½ in. diameter × 8 in. long.

The fire-box slopes downward and is stayed on top and sides with stay-bolts.

The engines also have feed-water heaters, which are shown under the running board.

We regret that we are not able to give the weight of these engines nor any report of their performance. The latter we hope to do at some future time.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Oregon Railway & Navigation Co., annual meeting, Oct. 20. Transfer books close from Sept. 28 to Nov. 2.

Galveston, Houston & Henderson, special meeting at Galveston, Oct. 1, to act upon a resolution of the board of directors sanctioning the surrender of the road to the trustees under the mortgage.

Danville, Olney & Ohio River, annual meeting, at Kansas, Ill., Oct. 14.

Cincinnati Railroad Co., special meeting to vote on the directors' proposition to increase the stock to \$2,000,000, at the Albany Building, Cincinnati, Oct. 8.

Dividends.

Atlantic & Pacific Telegraph, a quarterly dividend of ¼ per cent., payable Sept. 30.

Chicago & Northwestern, 1¼ per cent., quarterly, on the preferred stock, payable Sept. 28, at the office of the company, No. 52 Wall street, New York.

Oregon Railway & Navigation Co., 2 per cent., quarterly, payable Nov. 1, also an extra dividend of 10 per cent. in stock, payable at the same time. Transfer books for this dividend and the annual election, Oct. 20, close Sept. 28.

Lehigh Valley, quarterly, 1 per cent., payable Oct. 15.

ELECTIONS AND APPOINTMENTS.

American Railroad Ballast Unloader Co.—At a meeting of the directors, Sept. 11, P. Dowling was re-elected President, Geo. P. Merrill, Vice-President and Manager. C. H. Coy was chosen Treasurer, in place of P. Dowling, who was before Treasurer as well as President, and N. W. Dyer Secretary, in place of D. L. Brown, resigned.

Blue Line.—Mr. Wm. Garty has been appointed New England Agent. He will have charge of all west-bound traffic except that from Boston.

Cape May & Sewell's Point.—The incorporators of this new New Jersey company are: Jonathan Cone, Bristol, N. J.; Alexander E. Harvey; Henry Crawford, Philadelphia; David Edmunds, Cape May, N. J.; George L. Senat, Burlington, N. J.; Herbert W. Edmunds, Mt. Holly, N. J.; Edward S. Wycoff, Beverly, N. J.

Chicago, Burlington & Quincy.—Mr. W. A. Amory has been appointed Auditor of Expenditures, in the place of Mr. O. H. Smith, resigned.

Mr. L. E. Johnson has been appointed Master Mechanic of the St. Louis Division, with office at Beardstown, Ill. For several years he has been Master Mechanic of the same road's shops at Ottumwa, Iowa.

Delaware River.—William S. Conner, Esq., has been elected President, to fill the vacancy caused by the death of the late Thomas L. Ogden.

Fitchburg Railroad.—A circular dated Sept. 1 announces the appointment of Mr. S. W. Manning as Eastern Passenger Agent of the company. His territory will embrace Buffalo, Pittsburgh and east thereof, including New England and the Provinces. His address will be Fitchburg Railroad depot, Boston.

Fond du Lac, Amboy & Peoria.—Mr. I. Lederer has been appointed General Freight Agent, with office at Fond du Lac, in place of B. H. O'Meara, resigned.

Indiana, Bloomington & Western.—At the annual meeting in Indianapolis Sept. 8, the following directors were chosen for the ensuing year: Austin Corbin, A. Sully, G. E. Taintor, G. Oakley, D. C. Corbin, Gilman S. Moulton, Henry W. Maxwell, and J. K. Sherwood, New York; John L. Farwell, R. K. Dow, Claremont, N. H.; John P. Adriance, Poughkeepsie, N. Y.; J. B. Upham, Boston, and F. W. Peck, Chicago. The new directors are D. C. Corbin, H. W. Maxwell, G. S. Moulton, J. K. Sherwood, J. B. Upham and F. W. Peck. Austin Corbin was re-elected President and Alfred Sully Secretary.

Leadville, Breckenridge & Denver.—The directors of this new Colorado company are L. R. Harrison, Geo. R. Crane, James M. Tompler, Leadville, Col.; Sidney G. Miller, Madison, N. J.; Gouverneur Morris, Geo. L. Schuyler, New York; E. B. Litchfield, Brooklyn, N. Y.; John S. Crooks, Springfield, Mass.; Wm. B. Litchfield, Hartford, Conn. The office is in New York.

Louisville, Cincinnati & Lexington.—At the annual meeting in Louisville, Sept. 8, the following were chosen directors: Jacob Krieger, Sr., John B. Bangs, E. Thompson, Edward Fulton, Charles Tilden, James B. Wilder and A. L. Schmitt, Louisville; Henry Bell, E. D. Sayre, M. C. Johnson, Lexington, Ky. These are re-elected, with the exception of J. B. Wilder (who was President, but not a director), who succeeds G. Spratt, deceased, and A. L. Schmitt, chosen in the place of F. P. Schmitt, late Vice-President, who removes to Chicago. The officers chosen are James B. Wilder, President; Jacob Krieger, Sr., Vice-President; Wm. Mahl, General Superintendent; S. S. Eastwood, Secretary and Treasurer; A. Barnett, Attorney; J. W. Baird, Auditor, and W. M. Morris, Paymaster. Messrs. Krieger, Bangs, Fulton, Schmitt and Tilden form the Executive Committee of the board.

Nevada & Oregon.—John T. Davis is President of this new company, S. M. Holmes, Treasurer, and these, with Geo. L. Woods, James McMeahan, Trenner Coffin, J. C. McTarnahan and A. C. Ellis, are the directors.

New Jersey Midland.—Vice President Charles Parsons has been chosen President to fill the place made vacant by the resignation of Hon. Garret A. Hobart.

Newport & Wickford.—The new board of directors consists of George M. Miller, John N. A. Griswold, Hon. Levi P. Morton, New York; John T. Weaver and J. T. Bush, Newport, and S. H. Vaughn, Wickford. The only change is the election of the Hon. Levi P. Morton in the place of Mr. Henry Ledyard. Mr. George M. Miller continues President, Mr. John T. Bush Treasurer, and Mr. A. S. Sherman Secretary.

New York Underground.—The directors just chosen are Hugh J. Jewett, S. L. M. Barlow, Gen. Geo. B. McClellan, Samuel Campbell, Geo. R. Blanchard, G. S. Howard, Geo. Ticknor Curtis, R. Sewell, Andre Gilsey, E. A. Quintard, Douglass Campbell, J. T. Ruggles and James T. Preece. Gen. Geo. B. McClellan is President, Herbert N. Curtis Secretary, Geo. Ticknor Curtis Counsel, Sewell & Pierce attorneys; Messrs. McClellan, Gilsey, Sewell, Jewett and Quintard, Executive Committee.

Pullman's Palace Car Co.—At the annual meeting in Chicago Sept. 9 the following directors were chosen: Geo. M. Pullman, Charles G. Hammond, John Crerar, Marshall Field, Amos T. Hall and Robert T. Lincoln, Chicago; R. P. Flower, New York. The only change from last year is the substitution of R. T. Lincoln for J. N. Du Barry, of Philadelphia. The officers are all re-elected, namely: Geo. M. Pullman, President; Horace Porter, Vice-President; A. B. Pullman, Second Vice-President; A. S. Weinsheimer, Secretary; O. A. Lochrane, General Counsel; D. N. Welch, General Superintendent; Geo. F. Brown, Assistant to General Superintendent; Geo. M. Gray, General Ticket Agent. C. H. Davis, General Accountant; Wm. A. Angell, Purchasing Agent. The office of General Porter is in New York, of the others in Chicago.

Railroad Claim Agents' Association.—At the convention in Indianapolis, Sept. 8, the following officers were elected: President, T. H. Malone, of the Wisconsin Central, Milwaukee; Vice-President, C. H. Riggs, of the Union Line, Pittsburgh; Secretary, Dade Sams, Green Line, Atlanta, Ga.; Treasurer, E. G. Chadwick, St. Louis & San Francisco, St. Louis.

Texas & St. Louis.—The headquarters and general offices of Mr. C. F. Stephens, Superintendent, Mr. W. A. Gavett, General Passenger and Ticket Agent, and Mr. L. B. Fish, Treasurer, whose appointments were announced last week, will be at Tyler, Texas.

Tonawanda Valley.—The directors of this company are R. G. Taylor, B. W. Spencer, James D. Fish, C. S. Thomson, R. H. Farnham, G. B. Blanchard, C. Littlefield, D. Kirkpatrick, J. V. D. Loomis, R. S. Stevens, G. C. Parker, F. M. Wilder and G. W. Wells. R. G. Taylor is President, R. H. Farnham Vice-President, J. V. D. Loomis Secretary and B. W. Spencer Treasurer. Four of the directors are officers of the New York, Lake Erie & Western, the President being

Superintendent of the Buffalo and Rochester divisions of that road.

Vandalia Line.—Mr. D. W. Caldwell, General Manager of the Pittsburgh, Cincinnati & St. Louis Railway, has been appointed also General Manager of the Vandalia Line, to succeed the late Maj. John E. Simpson.

PERSONAL.

—Mr. H. G. Brooks, of the Brooks Locomotive Works, was one of the candidates for nomination to Congress before the Republican Convention in the Dunkirk district of New York last week.

—Col. John G. Clarke, a well known bridge builder and contractor of Baltimore, was instantly killed by a train making a flying switch on the Erie Railway at Paterson, N. J., last Wednesday. He was walking on the track with Mr. Watts Cooke, of the Passaic Rolling Mills, when the engine came up. That having passed he stepped back, not noticing that the cars were following, and was knocked down by them. Mr. Cooke very narrowly escaped.

—The *Indianapolis Journal* says: "The appointment of D. W. Caldwell as General Manager of the Vandalia Line has created considerable talk among railroad men. He is well known as the General Manager of the Pittsburgh, Cincinnati & St. Louis Railway, which position he has held for the past six or seven years. He is a civil engineer by profession, and a man of ability and foresight. The first position of prominence Mr. Caldwell occupied on a railroad was that of Chief Engineer of the Ohio Central road. He held that position for several years, and in 1869 he commenced services on the Pittsburgh, Cincinnati & St. Louis road as Assistant General Manager. From that position he went to that of General Superintendent, and in 1873 was appointed General Manager of the road, which position he now occupies. He will be General Manager of both lines, with headquarters at Columbus, O. From this it is natural to draw the inference that either a Superintendent or a Traffic Manager will be appointed for the Vandalia.

—Marshall O. Roberts, the capitalist, who died at Saratoga on the 11th, had been engaged in many transportation enterprises during his life. He built, some 40 years ago, the Hendrick Hudson, up to that time the largest steamer on the Hudson. He was connected with Erie in its early days, while its eastern terminus was still at Piermont, and was active in securing it a Jersey City terminus, and was a large stockholder in the Long Dock Improvement Co., from which the Erie leases a large part of its terminal facilities. He was one of the founders of the Delaware, Lackawanna & Western Company, and called the meeting which organized it. He was also connected with one of the first steamer lines from New York to the Isthmus of Panama, and also with the line to California, established by way of the San Juan River and Nicaragua, and we believe it was in connection with this line that he had the Florida Railroad built from Fernandina to Cedar Keys. He was also connected with Moses Taylor in several Texas railroad enterprises, including the predecessor of the present Texas & Pacific, the International, and the Houston & Great Northern, and he was a director of the Texas & Pacific at the time of his death. He was a native of New York city, a merchant by occupation, beginning his career with very little if any inherited wealth and dying at the age of 66 worth, it is supposed, about \$5,000,000.

TRAFFIC AND EARNINGS.

Grain Movement.

For the week ending Sept. 4, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past eight years:

Northwestern		Atlantic	
Year.	Receipts.	Total.	By rail.
1873.....	6,810,373	3,300,843	881,902
1874.....	3,105,478	3,441,377	323,919
1875.....	3,747,319	3,829,607	1,498,529
1876.....	4,240,794	4,192,884	1,808,411
1877.....	5,015,253	4,598,604	993,098
1878.....	8,402,587	6,905,490	1,316,419
1879.....	7,759,569	5,137,070	1,441,917
1880.....	6,077,269	6,323,361	2,132,330

Thus this year, compared with last, there is a decrease of 14 per cent. in Northwestern receipts, an increase of 23 per cent. in Northwestern shipments, and a decrease of 16 per cent. in Atlantic receipts.

The receipts of the Northwestern markets for the week are 22 per cent. less than in the preceding week, and are the smallest for seven weeks. The shipments of these markets are the smallest for five weeks, but only 3½ per cent. less than in the previous week, and in fact, very large. The receipts of Atlantic ports are the smallest for 14 weeks and nearly 14 per cent. less than in the preceding week. On the whole, there is a very considerable decline in the movement, such as occurred about the same time in 1878 (but not last year).

Of the Northwestern receipts, Chicago had 50 per cent.; Toledo, 16.5; St. Louis, 13.6; Peoria, 6.3; Detroit, 5.3; Milwaukee, 4; Cleveland, 3.4; and Duluth, 0.9 per cent. The Milwaukee receipts at last begin to increase a little, indicating that spring wheat has begun to come forward. Detroit also has increased receipts, due doubtless to the forwarding of the Michigan winter wheat.

Of the Atlantic receipts, New York had 49.2 per cent.; Baltimore, 19.5; Philadelphia, 10.8; Montreal, 9.8; Boston, 8.4; New Orleans, 2.1 and Portland, 0.3 per cent.

Exports of grain and flour from Atlantic ports for four consecutive weeks have been:

Week ending		Aug. 25.		Aug. 18.	
Flour, bbls.	Sept. 8.	Sept. 1.	Aug. 25.	Aug. 18.	Aug. 11.
84,113	88,149	110,191	97,585	97,585	97,585

The exports thus have been pretty steady for three weeks. From the opening of navigation to Sept. 1, the Buffalo receipts and shipments have been:

Receipts		Shipments	
1880.	1879.	1880.	1879.
By water.....	63,257,707	35,007,894	51,501,753
By rail.....	17,651,450	15,001,530	20,800,548
Total.....	80,909,157	50,009,424	72,302,301

Canal navigation was open 135 days this year and 117 last year, so that the average daily shipments were:

1880.	1879.	Increase.	P. c.
By canal.....	382,161	220,670	171,491
By rail.....	221,256	189,433	31,823

Thus after allowing for the longer time the canal has been open this year, we still have an increase of more than 78 per cent. in the daily canal shipments, which gives an idea of the capacity of the canal and the rapidity with which boats can be provided to supply the demand. But it should be said that this year canal rates throughout the season have been such as to bring out all the craft that could be used, while last year rates were hardly high enough to pay ex-

penses until the latter part of July or the first of August, when rail rates had been advanced.

Railroad Earnings.

Earnings for various periods have been reported as follows:

Eight months ending Aug. 31:		1880.	1879.	Inc. or Dec.	P. c.
Ala. Gt. Southern.	\$390,993	\$254,949	I.	\$136,044	53.3
Chic. & East. Ill.	778,638	520,930	I.	248,708	47.0
Chic. Mil. & St. Paul.	7,464,000	5,542,067	I.	1,921,933	34.7
Chic., St. P., Minn. & Omaha.	934,783	717,298	I.	217,485	30.3
Cin. & Springfield.	549,847	452,462	I.	97,385	21.5
Clev., Col., Cin. & Ind.	2,682,232	2,141,849	I.	540,383	25.2
Clev., Mt. V. & Del.	265,376	233,285	I.	32,091	13.8
Hannibal & St. Jo.	1,512,933	1,134,402	I.	378,531	33.4
Ill. Cen., Ill. lines.	3,928,022	3,491,181	I.	436,841	12.5
Ill. Cen., Ia. lines.	1,010,246	911,948	I.	98,298	11.4
Ind., Bloom. & West.	789,874	719,219	I.	70,655	5.8
Mem. & Charleston.	647,943	498,297	I.	149,646	30.0
Mobile & Ohio.	1,280,613	1,073,217	I.	207,396	19.3
Northern Pacific.	1,353,579	1,112,493	I.	241,086	21.7
St. L. & San Francisco.	1,598,238	828,244	I.	769,994	93.0
St. Paul & Sioux City.	882,846	675,503	I.	207,343	30.7
Scioto Valley.	201,087	177,404	I.	23,683	13.4
Tol., Peoria & West.	900,171	780,391	I.	119,780	15.3
Seven months ending July 31:					
Houston & Texas Cen.	\$1,688,512	\$1,389,522	I.	\$298,990	21.5
N. Y., Lake Erie & W.	10,672,040	8,938,625	I.	1,733,415	19.4
Month of August:					
Atch., Top. & S. F.	\$673,000	\$510,000	I.	\$163,000	32.0
Alabama Gt. So.	58,701	34,807	I.	23,894	65.8
Ches. & Ohio.	259,100	215,604	I.	43,495	20.1
Chic. & East. Ill.	131,777	75,300	I.	56,477	75.0
Chic., Mil. & St. P.	991,000	733,736	I.	257,264	35.1
Chic., St. P., Minn. & Om.	126,144	86,665	I.	39,479	45.5
Cin. & Springfield.	75,091	77,329	D.	2,238	2.9
Cleve., Col., Cin. & Ind.	434,164	363,258	I.	70,906	19.5
Hannibal & St. Jo.	212,896	141,553	I.	71,363	50.4
Ill. Cen. in Ill.	596,489	494,704	I.	71,785	14.5
Ill. Cen. in Iowa.	131,896	107,273	I.	24,623	23.0
Ind., Bloom. & West.	116,732	107,520	I.	9,212	8.6
Marquette, H. & O.	153,900	90,439	I.	63,461	47.7
Net earnings.	86,617	61,888	I.	24,729	30.7
Mem. & Char.	80,132	19,721	I.	60,411	36.3
Mobile & Ohio.	136,166	106,147	I.	30,019	28.3
Northern Pacific.	208,300	210,927	D.	2,627	1.2
Pad. & Memphis.	50,560	43,764	I.	15,796	30.6
St. L., A. & T. H., Belleville Line.	267,319	181,431	I.	85,888	47.3
St. L. & San Fran.	118,352	97,867	I.	20,485	20.9
St. P., Minn. & Man.	232,579	188,940	I.	43,639	23.7
Scioto Valley.	32,384	29,205	I.	3,179	10.8
Tol. P. & Warsaw.	127,209	102,282	I.	24,987	24.4
Month of July:					
Houston & Texas Cen.	\$227,079	\$186,848	I.	\$40,231	21.9
Expenses.	102,959	135,915	I.	27,044	19.9
Net earnings.	64,721	50,934	I.	13,787	27.1
N. Y., Lake Erie & W.	1,580,976	1,273,533	I.	307,443	24.1
Expenses.	1,014,658	857,083	I.	157,575	15.5
Net earnings.	566,318	416,450	I.	149,868	29.0
Ches. & Ohio.	238,236	173,383	I.	64,853	37.4
Expenses.	177,722	130,228	I.	47,494	36.5
Net earnings.	60,514	43,155	I.	17,359	40.2
Third week in August:					
Minneapolis & St. Louis.	\$15,356	\$6,828	I.	\$8,528	125.0
Week ending Sept. 4:					
Grand Trunk.	\$212,693	\$172,290	I.	\$40,403	23.4
First week in Sept.:					
Burl. C. R. & North.	\$35,284	\$34,985	I.	\$299	0.8
Chic. & E. Ill.	35,884	21,295	I.	14,589	68.5
Chic. & Alton.	173,548	133,901	I.	39,647	29.5
Denver & Rio Grande.	80,516	25,012	I.	55,504	222.0
Flint & Pere Mar.	31,885	21,148	I.	10,737	50.7
Hannibal & St. Jo.	43,904	41,161	I.	2,863	6.8
Louisville & Nash.	183,000	105,638	I.	77,962	73.9
St. L., Iron Mt. & Southern.	166,300	142,673	I.	23,627	16.6
Wab. St. L. & Pac.	245,125	202,832	I.	42,302	20.9

to show the original point of shipment on the way-bills, and to note thereon whether the property has been weighed or not.

"In accordance with the agreement above recited, you will please instruct your agents to charge for actual weight on all shipments of freight, in car lots, received from connecting roads and destined to or beyond the Missouri River.

"In the events of shipments being underbilled, you will have collection made on the basis of actual weight from the initial point of shipment to destination, and will cause remittance of the proportion of the excess due to be made to the parties in interest.

"Special care should be taken that all property, of any kind or description, in car lots, originating at any point on your road, and destined to or beyond the Missouri River, is correctly weighed and way-billed and charged at actual gross weight from the starting point to destination.

"Please make these instructions imperative, and see that there is no failure to carry them out."

Lake and Canal Rates in August.

The Buffalo Commercial Advertiser says: "The month of August is usually rather quiet in the lake and canal trades, as it falls between the moving of the new and the old crops. But this year the heavy movement of the early part of the season continued through August. As we have already shown, the shipment of grain through Buffalo was larger last month than during any preceding August in the history of the port. As a consequence, freight rates by lake ruled high; but by canal the average is not quite so high as for 1879, which is accounted for by the increased tonnage, and the greater facilities accorded to boats this year. The following exhibit shows the average freight rate on wheat and corn from Chicago to Buffalo by lake, and the average on the same cereals to the East by canal, for the month of August in the years named:

Year.	Lake.		Canal.	
	Wheat.	Corn.	Wheat.	Corn.
1870.....	5.0	4.7	9.4	9.2
1871.....	6.2	5.7	11.8	10.8
1872.....	9.6	8.8	12.0	11.0
1873.....	6.5	5.6	10.6	9.6
1874.....	3.1	2.1	9.0	8.0
1875.....	2.5	2.2	8.1	7.3
1876.....	2.2	1.8	5.8	5.3
1877.....	4.0	3.6	7.0	6.4
1878.....	3.2	3.0	5.2	4.6
1879.....	4.0	4.5	6.5	5.9
1880.....	5.6	5.1	5.9	5.4

"As a whole the transportation business of the country is in a remarkably satisfactory condition this year. The above figures indicate that vessel-owners and boatmen are having about all they can do, and that the business is being done at a profit. The result of this prosperous condition of affairs is that boat-builders, dock-yards, ship-chandlers and supply stores are doing well."

Lake-and-Rail Rates via Sandusky.

In the matter of the complaint against the Baltimore & Ohio Railroad for having made a rate on shipments from Chicago to Baltimore, by lake to Sandusky and by rail thence to Baltimore at a rate three cents per 100 lbs. less than the lake-and-rail rate from Chicago to New York via Buffalo or Erie, Messrs. Charles Francis Adams, Jr., David A. Wells and John A. Wright, the arbitrators to whom the joint Executive Committee of the pool had referred the question, have handed in their decision, which is as follows:

"1. We find no existing agreement between the trunk lines covering the adjustment of rates between seaboard cities and the lake ports of those lines on lake-and-rail traffic.

"2. The existing agreements should be so amended as to provide for all descriptions of lake-and-rail traffic on an equitable basis, which would enable the Baltimore & Ohio to secure its proportion of that traffic by making a rate from Sandusky to the sea-board ports which may be less than the proportion of the all-rail Chicago rate, or less than the local rate from that point.

"The matter is therefore referred back to the parties in interest for adjustment on this basis, and in case of their inability to agree, it can hereafter be made the subject of a new arbitration, in which evidence must be offered to show what would constitute a suitable rate to secure the fair apportionment of the traffic in question."

A Memphis Pool.

The Memphis Avalanche of Sept. 5 says: "The annual conference of representatives of the Southern railroad and steamboat lines was begun in the parlors of the Peabody Hotel, on Friday morning, to arrange rates of through freight for the present season. In regard to rates of freight, it was agreed to make no changes for the present season. When the conference had extended to the formation of a pool for the division this season, there came a breeze. The Louisville & Nashville, Memphis & Charleston and Mississippi & Tennessee roads failed to agree as to the proportions of business to be given to each, all claiming to have acquired better facilities during the past season. This proved a stumbling block in the way of the formation of the division pool, and none had been made when the conference ended up to-day. The three roads, however, agreed to submit their differences to a board of arbitration, composed of prominent railroad men, at an early date, and it is expected that a settlement of the difficulty will then be made, and the pool established upon a satisfactory basis."

Norfolk Cotton Business.

For the cotton year ending Aug. 31 receipts of cotton at Norfolk, Va., were as follows, in bales:

By Atlantic, Mississippi & Ohio RR.....	294,062
By Seaboard & Roanoke R. R.....	245,819
By canal and otherwise.....	57,205
Total.....	597,086
Total, 1878-79.....	443,285

Increase (34.7 per cent.)..... 153,801

Of the receipts in 1879-80, there were 313,743 bales through cotton, in transit for other points, and 283,343 bales local, consigned to Norfolk.

Shipments for the year were as follows, in bales:

	1879-80.	1878-79.	Increase.	P. c.
Exported to foreign ports...	257,065	203,536	53,529	26.3
Shipped coastwise.....	336,732	239,158	97,574	40.8
Total.....	593,797	442,694	151,103	34.1

Of the exports last year 246,674 bales were to Great Britain. Coastwise shipments included 132,384 bales to New York; 68,510 to Providence; 54,431 to Boston; 50,037 to Philadelphia, and 31,370 to Baltimore.

Pensacola Traffic.

For the year ending with June, this year, 533 vessels with a capacity of 308,990 tons cleared from the port of Pensacola, against 403 vessels and 217,487 tons capacity the year before, an increase of nearly 30 per cent. in capacity. The exports were nearly all lumber. Imports were very small, including 3,033 tons rails and fish-plates, and a little coal, salt and guano.

Revision of the Peoria Apportionment.

The Board of Arbitration, to whom had been referred the application of the Chicago, Rock Island & Pacific for a rehearing concerning the award of May 19 last, apportioning east-bound traffic from Peoria, reports that it does not find in the application any facts or arguments not included in the statements previously submitted, or which, in its opinion, would afford reasonable ground for a rehearing.

RAILROAD LAW.

Powers of Councils over Location of Railroads in Illinois Cities.

In the important case of the Chicago & Western Indiana Railway Company, whose completion to its depot grounds in Chicago has been hindered for several months by a decision of the Superior Court of Chicago that the ordinance passed by the Chicago Common Council, purporting to give the company authority to construct on and across city streets, was void for want of definiteness, the Illinois Supreme Court, as recently noted, has rendered a decision, written by Justice Dickey and concurred in by Judges Scott, Craig and Sheldon, with Judge Walker dissenting, which is summarized as follows in the Chicago Tribune:

The opinion sets out by stating that the decree of the Superior Court is clearly erroneous. Under the present laws of Illinois a railroad company organized under the general law of 1872 has authority to select its own route, lay out its line and construct it. This power, by necessary implication, carries with it the power of fixing the terminal points. This power is subject to a limitation that the road cannot be constructed upon or across any street in any city without the assent of the corporation. This is the only limitation. If there be no other, it is obvious that a railroad company may, as a general rule, select its own route, fix its terminal points, lay out its route, and acquire the right of way and other property necessary for the construction of its road on any and every part of the line, whether within the city limits or without them, according to its own discretion, for this limitation is confined to the construction of the railroad upon or across streets.

The suggestion that the mere existence of the power possessed by the City Council of Chicago to provide for the location, the grade and crossing of railroads within the city is a further limitation, is not looked on with favor by the Court. The city possesses the power to act on this subject, and its mere existence can have no effect unless it is exercised by the city. The City Council has no power to locate a railroad. That power is conferred on the railroad company. The power of the city is to provide for the location of the road by the railroad company, the only condition precedent being that the assent of the corporation must be obtained before the road can lawfully construct its line upon or across a public street. Under the law prior to 1872, companies could not lawfully locate any part of their lines, or construct them within any city, or condemn private property for corporate purposes within any city until the consent of the Council was first obtained. By the general law of 1872, however, that has been altered, and there is no prohibition against the location of the line, even across or upon streets. The prohibition relates simply to the construction of the road upon and across them.

The Court holds that a railroad may proceed to condemn private property within a city before the consent of the corporation has been obtained to the crossing of the streets. The law, says the Court, does not provide the way in which a railroad company shall proceed in acquiring its right of way. Such was the decision in the case of the Metropolitan Street Railway Company. Under the present law, therefore, it is not necessary as a condition precedent to the location of its line within the city by a railroad company, or to the construction of its track within the city on such parts of its line as are not upon any street, but it has power to condemn any private property within the city without any ordinance being passed by the Council giving assent to the construction of the road upon or across streets, or providing for the location of the railroad. It is not necessary, however, to go further into that point, inasmuch as an ordinance has been passed by the Council.

It is claimed, however, that the ordinance is void, because it fails to designate the precise line upon which the railroad may be constructed, and omits to designate the precise point at which the road may be constructed across and upon the several streets to be intersected. The Court finds nothing in this objection. The matter is left to the discretion and judgment of the Council. It is not provided that these powers of the Council can only be lawfully exercised on a line precisely defined. Consent may be granted by the Council, if it think it wise to do so, without specifying the precise point at which the streets shall be crossed. The Court here refers to a number of ordinances passed by the City Council granting railroads the right of way into the city, to show it has not been always customary to strictly specify the line. Railroads have previously been permitted to enter cities without defining the precise track, and simply by stating the district within which they might locate the line; and this practice has been so universal that it must have been known to the General Assembly when the general railroad act of 1872 and the city incorporation act of the same year were enacted. Had the General Assembly intended to prohibit that mode of granting the license or permission in question by city councils, some more definite language would have been used than that found in either of these statutes. The Court finds no vital objection to the ordinance on the ground that the route is not defined with more certainty.

It is insisted by appellees that permission to construct the road across the streets at any point to be selected by the railroad company within a given district is a delegation to the railroad company of powers which can only be exercised by the City Council. With that the Court does not agree. The power to provide for the location of railroads is conferred on the Council, but the duty of exercising it in all cases is not imposed upon the Council. The law leaves to the discretion of the Council the question as to the cases in which the powers shall be exercised.

It is also insisted that the ordinance is void for lack of previous petition of persons owning property on so much of the street as was proposed to be used in the construction of this road. Inasmuch as those parts of the streets which are crossed lie between property acquired by the railroad company for railroad purposes this objection is considered invalid.

It is also insisted by appellees that the provision that the permission granted in the ordinance is upon the condition that the railroad company shall permit any other railroad companies, not exceeding two in number, not having at present any road or entrance into the city, to use the track authorized to be laid jointly with the Chicago & Western Indiana is a delegation of the power of the Council, and operates to divest it of some of its charter powers, and that, therefore, the ordinance is invalid. This position, the Court says, is not tenable. A railroad company has by law the right to lease the use of its track to any other railroad company. This provision, therefore, does not confer upon the company any power whatever, nor deprive the city of any power. It is a burden imposed by the ordinance upon the railroad company, requiring that it shall furnish additional railroad facilities to the

city of Chicago by consenting to make arrangements with such other railroad companies as are described in the ordinance for the joint use of their tracks. Counsel characterize the ordinance as one likely, if effective, to bring great injury upon the city of Chicago, and to produce evil to the public. That, says the Court, is not a question for its determination. The Court finds nothing on the face of the ordinance rendering it vicious, nor is it alleged in the bill that any injury to the public is to result from its passage. Therefore the decree of the Superior Court must be reversed and the bill dismissed.

THE SCRAP HEAP.

A Big Train.

The Aurora (Ill.) Beacon of Sept. 4, says: "While testing engine 350—the last of the new Baldwin 51-ton engines—last Monday, Mark McGlenn hauled 103 cars and two dead engines from Chicago to this city, 38 miles, in two hours. This was equivalent to 115 empties, and is said to have been the largest train ever brought out of Chicago by one engine. She took in 70 loads that morning from this city."

A Driving-Wheel Flies Off.

The Ithaca Journal of Sept. 8 says: "Yesterday morning, as passenger train No. 9, coming west on the Erie road, was running down the steep declivity of Shawangunk Mountains, just a few miles east of Port Jervis, an accident happened that might easily have killed or wounded hundreds of passengers. We learn the following particulars from an Ithacan who was on the train: The train had just left Guymard Station, at the summit of the mountain, and was flying at lightning rate down the heavy grade, in order to make up lost time, when suddenly a short, sharp whistle, as a signal of danger, rang out from the engine, and the next instant the grating and grinding of the brakes was felt on the wheels as the full force of the steam went surging back through the pipes. The train came to a stand almost instantaneously, having run only about one length after the whistle sounded. The forward driver of the left side lay on the track, the axle having broken off close to the wheel, and an examination revealed the fact that for a long time it had been nearly severed, only the merest segment holding the wheel fast. The massive steel connecting bars had been wrenched loose, and swung around by the remaining driver, tearing the side of the cab, in which the fireman was, in a fearful manner, and coming around to the ground had in its turn bent double, and wrenched loose. As the passengers looked over the steep side of the mountain along which they had been running they shuddered to think how close their escape had been."

Method of Examination for Color-Blindness.

The following is the order issued by the Surgeon General of the Navy for the examination of seamen for color-blindness:

"Upon the receipt of this order and the colored worsteds to be used as tests, medical officers of ships and stations will make a careful examination of all persons in the navy as to their color sense, the result to be reported to this Bureau according to the accompanying form. Quarterly returns will also be made of the result of the examinations of those who shall be hereafter examined for the service.

"The method to be employed is that of Holmgren, and for this purpose a set of test wools is supplied, which contains three large skeins, 'test colors,' green, purple (pink), and red, and a number of small skeins, the 'confusion colors.'

"The usual mode of examination is by Holmgren's method, which may be briefly described as follows:

"The worsteds are placed in a pile in the center of a piece of white muslin which is spread out on a flat surface in a good daylight. The green test skein is placed aside upon the white cloth, and the person to be examined is directed to select the various shades of the same color from the pile, and place them by the side of the sample. The color-blind will make mistakes in the selection of the shades; or a hesitating manner with a disposition to take the wrong shades may show a feeble chromatic sense. The purple test skein is then used. If the test with the green skein has shown the person examined to be color-blind, and on the second or purple test he selects only the purple skeins, he is incompletely color-blind; but if he places with the purple, shades of blue or violet, or both, he is completely red-blind. If, however, he selects to be placed with the purple, shades of green or grey, he is completely green-blind.

"The red test skein need not necessarily be used, but it may be employed to confirm the diagnosis already made, for the red-blind will select to match the red skein, shades of green or brown which to the normal sense seem darker than the red, while the green-blind will select the shades of green or brown which seem lighter."

OLD AND NEW ROADS.

Atchison Union Depot.—The celebration of the completion of this depot occurred Sept. 7, the feature of which was the display of decorated locomotives. Three were entered for the premiums offered, and the decorations were exceedingly elaborate and costly. The decorations of the Central Branch Road represented the progress of American civilization; the Atchison, Topeka & Santa Fé represented the Goddess of Railroads and Agriculture; and that of the Atchison & Nebraska was floral. The celebrated locomotive "America," which took a premium at the World's Fair at Paris, was also present. The first premium was awarded to the Central Branch locomotive, Gen. Stringfellow delivered an address, which was a historical sketch of railroads. A banquet in honor of the guests present followed in the evening.

Atlanta & Alabama.—Notice is published of an application to be made to the Georgia Legislature for a charter, under this title, of a company "to construct and operate a railroad from Atlanta to some point in Alabama touching the Alabama coal fields, and forming such Western connections as may be desirable." Of this application the Atlanta Constitution says: "It is made by some of the best citizens of Atlanta, and a strong company will be organized as soon as the charter is obtained, to push this road through, and capitalists are ready to back the enterprise. A charter can be obtained in Alabama through the courts, under the new constitution, and steps will be taken at once to have this done."

Atlanta & Charlotte Air Line.—This company, in connection with the Greenville & Columbia and the South Carolina Railroad, has opened a freight line between Atlanta and Charleston. The distance by this route is 433 miles, against 519 by the Georgia Railroad and the Port Royal & Augusta.

Atlantic Coast Line and Piedmont Air Line.—The Atlanta Constitution publishes a report that these two lines (there are several roads in each) have made a combination "for the purpose of preventing the cutting of rates and for equalizing business," and had heard that A. Pope, of the Atlantic Coast Line, will be General Passenger Agent for the joint lines, and Solomon Haas, of the Richmond & Danville, their General Freight Agent.

Boston & Lowell.—This company has been adding ad-

ditional sidings on its line, and enlarging its yards at Lowell, Lawrence, and other points, to meet the wants of its increasing traffic. The widening of the tunnel at Lowell is completed, and the new train house at that point nearly so. The new depot at Lawrence is expected to be ready this week. It is said to be one of the finest in the state.

Brooklyn Elevated Railroads.—The Rapid-Transit Commission of Brooklyn appointed by the Mayor under the general railroad act have reported their plans for a rapid-transit road, and the report has been filed in the Mayor's office. The statement includes the estimate and figures of J. J. R. Croes, the engineer of the board, with calculations as to the different styles of elevated roads. The routes were fixed on Aug. 11 last and provide for a line running from Fulton Ferry in a series of curves over streets and through blocks to Adams street up to High street, then to Fulton street and up to the line of the city at New Lots. There is to be a branch down Myrtle avenue to the city line at Newtown and a line from Fulton street at Flatbush avenue to Fourth avenue, then to Prospect avenue and Twenty-first street, while another branch is to leave Fulton avenue at Grand avenue and via Atlantic avenue to the Coney Island Railroad depot. The time allotted for the completion of these several sections of the road runs from two to four years. The general plan in Adams street and the narrow thoroughfares is to have the tracks over the centre of the street, with columns on the edges of the sidewalks. For Fulton street and Myrtle, Prospect and Ninth avenues it is proposed to have one column in the centre of the street, with the car-track separated if necessary to accommodate it, and the other supporting column on the side-walk, one track to be over the central row of columns and the other as far from the houses as possible. In Flatbush and Fourth avenues the elevated structure is to straddle the horse-car tracks as it does in Third avenue, New York. The highest grade is 79 ft. to the mile. A very lofty station will be required at Fulton Ferry, and the engineer remarks that this difficulty can be readily overcome by the use of car elevators at that point capable of raising at once a loaded train of fifty tons. The estimated cost of the structure is \$612,000 per mile, or for the thirteen miles \$7,956,000. The specifications of the commission are very exact. The iron structure must allow a clear space of twelve feet above the road-way and nine feet above the sidewalk, and the strength must be sufficient to carry a moving weight of 2,000 lbs. per foot on each track. Over all cross-walks in the street, aprons or tight floors must be suspended or laid to prevent the falling of cinders and the like to the pavement. The iron-work is all to be painted a light color, and it is provided that all steam locomotive engines used shall be fitted with the most efficient and approved devices which may be now or hereafter known for the consumption or purification of the smoke, prevention of discharge of cinders and repression of noise from the discharge of steam or from the running-gear. The fare may be as much as 10 cents, except between the hours of 5.30 to 7.30 a. m. and from 5 to 7 p. m., when five cents only may be charged, as directed by law. The Commissioners will open books for subscription early in October, but as yet they have no information that any body of capitalists intend to take up rapid transit in Brooklyn according to these plans. The capital stock of the company is fixed at \$1,000,000, in 10,000 shares.

Buffalo, Pittsburgh & Western.—It is reported that Buffalo and New York capitalists will organize a company under this name to build a road from Prospect Station, on the Pittsburgh, Titusville & Buffalo, direct to Buffalo, with a capital of \$1,000,000.

Burlington, Peoria & Toledo.—The articles of association for incorporation of this company were filed at the Recorder's office, Peoria, Ill., on the 4th inst. Capital stock, \$12,000,000. This is the line which the Chicago, Burlington & Quincy threatens to build.

Canada Pacific.—It is reported that the syndicate which undertakes the construction of this road consists of the London banking house of Morton, Rose & Co., the Société Générale de Paris, and the New York house of J. S. Kennedy & Co. The latter is, or was, largely interested in the St. Paul, Minneapolis & Manitoba road, which is likely to be very greatly benefited by the construction of the Canada Pacific west of Winnipeg.

Cape May & Sewell's Point.—Articles of association of this new company have been filed in the Secretary of State's office at Trenton, N. J. The road is to be two miles long, and to run from Sewell's Point, Cape May County, to the corner of Madison avenue and Beach drive, Cape May City, N. J. Capital, \$30,000, in 600 shares.

Catskill Mountains.—A meeting of capitalists was held in Catskill, N. Y., Sept. 9, presided over by ex-Congressman Bagley, at which it was resolved to build a railroad from Catskill to the mountains and the interior towns, to accommodate summer travel, and three-fourths of the stock was subscribed. The country back of Catskill has become one vast summer boarding-house, but it takes a wagon ride of from three to six hours to reach most of them. There is hardly anything else to support a railroad there.

Central Pacific.—This company has built immense wharves at Martinez and Benicia at the southeastern end of San Francisco Bay, and it delivers grain there for 50 cents a ton less than the rate to Oakland. As a result, it is said that much of the wheat crop exported is taken by the vessels at Martinez, and there is complaint at Oakland that the business there is correspondingly reduced.

Chicago, Burlington & Quincy.—It is reported that this company is negotiating for the Lake Erie & Western Railroad to use in lieu of the line from Peoria to Toledo, which it threatens to construct to compete with the Wabash. Then all that would be needed would be to build a line from Bloomington to Peoria, which is less than 40 miles. The terminus at Fremont or Sandusky, however, would not be so favorable for competing with the Wabash as one at Toledo, which could be reached only by using the Dayton & Michigan road, the Columbus & Toledo, or building a new line some 40 miles long. Connections with the Lake Shore, the Baltimore & Ohio and the Pennsylvania, however, would be made without this. Such a connection would be likely to increase immensely the traffic of the Lake Erie & Western, as it would at once become to the interest of the Chicago, Burlington & Quincy to send all the through freight possible to and from points west of Galesburg by way of this road rather than by way of Chicago, thereby getting a haul some 300 miles further. This would seem much more rational (on terms fair to both parties) than building a new road, but would help the Lake Erie & Western most.

The route, as described, of the Southern Iowa & Nebraska road, which this company proposes to build to "head off" the extension of the Missouri, Iowa & Nebraska, will not be parallel with the latter, as reported, but will extend from Humeston, a point on the Mt. Airy Branch, some six or eight miles north of the line of the Missouri, Iowa & Nebraska road, and extend to the Missouri River at Corning, which is 108 miles west and about 40 miles south of Humeston, and about 28 miles south of the proposed Missouri River

terminus of the rival road. Why the Burlington should begin this line at Humeston is not at all clear; its Mt. Airy Branch extends 67 miles beyond Humeston in the same general direction that must be taken to reach Corning. It may be intended to divide the distance now existing between this branch and the main line, which is generally about 20 miles, and keep nearly due west till nearly north of Corning. The length of the proposed line is said to be 135 miles.

Chicago & Indiana Southern.—The directors of this company and of the Indiana & Chicago Railway Company met in Crown Point, Ind., Sept. 10, and adopted articles of consolidation under the name of the Chicago & Indiana Southern Railway Company.

Chicago & Indianapolis Air Line.—A Delphi correspondent of the Indianapolis Journal says that work is going on at both ends of the line of this road (the successor of the Indianapolis, Delphi & Chicago), notwithstanding the unfavorable reports. The part between Chicago and Indianapolis is to be of standard gauge, and the completed part of the road is being widened now. Rates for 30 miles of track and one additional locomotive have recently been contracted for. It is expected to complete it to Delphi within the next six months.

Chicago, Milwaukee & St. Paul.—The people between Berlin and Waupaca, Wis., a distance of about 30 miles, are discussing the policy of offering some inducements to this company to extend its Berlin Branch northward to and through Waupaca. It is claimed that for 40 miles north of Berlin it would pass through an old settled country, and further north would develop a lumber and mineral country. North of Waupaca such a road would be about parallel with and 30 miles east of the north and south line of the Wisconsin Central, and all the way from Berlin only about half as far from the extension of the Milwaukee, Lake Shore & Western.

A telegram from Sioux City says that this company has let the contract for the construction of a new line between Gayville and Yankton, on the Sioux City & Dakota Division, a distance of 7½ miles. The present line, on the bank of the Missouri, has been moved back from the edge of the bank several times to avoid caving in, and the new line will be inland, to avoid permanently that danger.

Chicago & North Pacific Air Line.—It is reported that this company's property has been purchased by the Chicago, Milwaukee & St. Paul. It consists chiefly of some grading from the Illinois line, near Lake Geneva, northeast through Elkhorn and Whitewater to Jefferson, Wis. An extension about 25 miles southeast to Libertyville, Ill., on the company's Chicago & Milwaukee line would give it a much shorter line to Chicago from its lines in Western Wisconsin and further west.

Chicago & Northwestern.—This company has awarded to Kuhn, Loeb & Co., of New York, an issue of \$1,528,000 of first-mortgage 6 per cent. bonds, principal and interest guaranteed by the Chicago & Northwestern.

Cincinnati Railroad Co.—This corporation, which works the Cincinnati Southern road, has decided to increase the capital stock to \$3,000,000. The present capital stock of \$1,100,000 is found to be inadequate to provide the additional amount of rolling-stock necessary to handle the increasing traffic of the road. As the action of the directors has to be ratified by the stockholders, a meeting for that purpose has been called, to be held at the Albany Building, Cincinnati, Oct. 8.

Chicago & Western Indiana.—This company on the night of the 15th succeeded in laying its track across the track of the Illinois Central, used by the Chicago, Burlington & Quincy, in Sixteenth street, in Chicago, on its way to its station grounds at Twelfth street. It was done under the protection of policemen, and the Illinois Central sent a locomotive down to try to obstruct a crossing, which was removed by the police. The Lake Shore kept a locomotive on its track in the route of the road near by all Wednesday, but no attempt was made to lay a crossing there. Wednesday evening an attempt was made to lay the track across the streets from Twelfth to Van Buren streets, and succeeded in getting it laid across three or four streets, there being here blocks of houses between on the route. The law requires that a city officer shall superintend the laying of rails across streets, and the company had notified the authorities to have such an officer on hand, but the request was refused on account of the unreasonableness of the hour. When the work was begun the Superintendent of Streets appeared and called on the citizens to resist the track-laying, though an injunction had been obtained restraining the city officers from interfering. There has been a great deal of opposition to the laying of the road among the residents of the vicinity, and a mob at once gathered, tore up the tracks and burned the ties. It is said that the company is willing to make its terminus at Twelfth street, but it has authority to extend its road further north, and it is not at all likely that the obstacles that have been put in its way will be anything more than temporary.

Cleveland, Canton, Coshocton & Straitsville.—On the 10th 200 men and teams began work on this road at Canton, O., and others at Navarre and other points.

Dallas, Cleburne & Rio Grande.—A meeting was held at Dallas, Tex., Sept. 8, in the interest of this projected road, at which, in addition to the citizens, representatives of Scotch and other capitalists and Mr. George W. Waite, the Chief Engineer, were present. From Dallas southwest to Cleburne a route has been surveyed that is 51 miles long, and a rough estimate of its cost, equipped, is \$700,000. It was said that if the people on the line would meet the projectors on fair terms the ground would be broken at an early day.

Denver & Rio Grande.—A telegram from Denver, dated the 14th, says that this company has let the contract for grading the extension from Kokomo to Breckenridge, and hopes to have the track down to Kokomo by November and to Breckenridge by January.

Denver, South Park & Pacific and Denver & Rio Grande.—It is reported that negotiations have been in progress for the consolidation of these two companies. Gov. John Evans, of Denver, is said to own a majority of the stock of the South Park road, which uses a small part of the Denver & Rio Grande to enter Leadville, but has the short line from Denver to that place, and must be enormously profitable at present; but Jay Gould and associates are also supposed to have a considerable interest in it, while they control the Denver & Rio Grande. The Denver Times says that so far no success has attended the efforts to consolidate the companies, and that no present prospect exists that they will be consolidated.

Detroit, Grand Haven & Milwaukee.—This company has entered into a contract for ten years with the Goodrich Transportation Company, of Chicago, which is the leading owner of steamboats on Lake Michigan, for performing the transit business between Grand Haven & Milwaukee. There is to be a day line and a night line, the

better to connect with the trains out of Milwaukee. The Goodrich Company will build three new steamers to use on this line, two propellers and a side-wheeler. The latter the Detroit Dry Dock Company has contracted to build. It will be wholly of iron and of the following dimensions: Length of keel, 280 ft.; length on deck, 245 ft.; actual breadth of beam, 32 ft.; breadth over guards, 59 ft.; depth of hold, 12 ft. It is to be delivered by the 1st of May next. The propellers are to be built at Manitowoc and need not be put into service until December of next year. They will be of about 1,200 tons burthen each. The latter will carry both passengers and freight; the side-wheeler passengers chiefly, making a round trip daily.

Detroit, Mackinac & Marquette.—The first visible effect of this road on the development of the country is the negotiation by persons owning charcoal furnaces at Marquette for large tracts of timber land at points 15 and 25 miles east of Marquette, intended to supply a permanent supply of fuel. It is intended to establish 80 kilns on these lands.

Fernandina & Jacksonville.—The contract for the construction of this Florida road was let, Sept. 9, to Geo. W. Flowers & Co., who are to have it ready for trains by Dec. 15 next. It is said that the time from Fernandina to Jacksonville will be 50 minutes, but as the distance is 33 miles (21½ new road), this is not at all probable. At present the distance by rail between the two places is 66 miles, the route being 47 miles southwest by one road and 19 miles directly east by another. The only considerable traffic is the travel of tourists and invalids in the winter, who reach Fernandina by steamboats from Savannah. But this travel is divided among the all-rail route, and the steamers that run directly to Jacksonville and points higher up on the St. John River, as well as the Fernandina route, while the short Jacksonville line which the Savannah, Florida & Western is to build will greatly shorten the all-rail route.

Flint & Pere Marquette.—The Boston Transcript says: "The recent decline of this stock from 24 to 18 (it sold privately as low as 17) was due to the report from the West, at the time of the sale of the road in accordance with the reorganization scheme agreed upon a year ago, that the common stock would not be issued until the preferred stock had received dividends for five successive years. This was entirely in error, for the common stock is to be issued immediately in exchange for the purchasing committee's certificates given some months ago to the old common stockholders. Dividends can be paid upon this stock whenever, in the judgment of the company, they have been fairly earned. But the common stock cannot vote until the preferred stock has received 7 per cent. dividends for five successive years."

Florida Ship-Canal.—General Q. A. Gillmore, U. S. Engineers, has lately completed the survey of a route for the proposed ship-canal across the peninsula of Florida, and reports that the work is feasible. The principal benefit to be directly derived from the completion of this enterprise would be the saving of about 500 miles to vessels in passing from Gulf ports to those on the Atlantic, and vice versa, and the avoidance of the dangerous passage of the Florida straits.

The route selected is as follows: The eastern terminus of the canal is located at Camp Pinckney, at the head of ship navigation, and twenty miles above the town of St. Mary's. Thence it runs, in a southwesterly direction, to and through the Okefinokee swamp, crossing the Suwanee River at Blount's Ferry in Columbia County, and thence to Ellaville in Madison County. The length of the canal route is about 169 statute miles, divided as follows:

	Miles.
From the bar to mouth of St. Mary's River.....	5.5
Navigation of St. Mary's River to Camp Pinckney.....	34.0
Canal.....	122.0
To deep water in Gulf.....	7.5
Total.....	169.0

A channel will have to be dug from the mouth of the canal to the deep waters of the Gulf, about 7.5 miles from the shore, as above indicated. The protecting jetties of this channel will form, when constructed, a harbor of refuge for shipping.

Fulton County.—This narrow-gauge road has been completed to the Illinois River opposite Havana, and passenger trains began running through Sept. 6. The distance is 17 miles, on seven of which track has been laid since we last reported.

Galveston, Houston & Henderson.—The following notice has been issued to stockholders, under date of Sept. 1: "A special meeting of the stockholders of the Galveston, Houston & Henderson Railroad Company of 1871 will be held at their office, in the city of Galveston, on Friday, Oct. 1, at 12 o'clock m., for the purpose of acting upon the following resolution, adopted by the board of directors of this company at a called meeting held in the city of Galveston, on the 28th of August, 1880.

"Whereas, An agreement was entered into on the 21st instant, between the President of this company and the trustees under the mortgage trust deed dated Dec. 16, 1871, by which the said President, acting in the name of the company, surrenders possession of the road to said trustees; "Resolved, That the said agreement meets the sanction of this board, and is recommended to the adoption and acceptance of the stockholders of the company, at a meeting to be called by order of the President, as soon as the same can be held, the said trustees, however, to account to this company. "A full representation of stock is earnestly requested."

Guatemala Railroad.—A telegram from Panama, dated Sept. 10, says that Guatemala has concluded a new contract with Messrs. Guillermo, Nanne and Louis Schlesinger, for the continuation of the railroad from Escuintla to Guatemala City, thus making direct communication between the capital and the port of San José. The work must be begun within one year from the date of contract, and finished and opened to traffic within three years, otherwise the contract will be null. This line cannot be very long, as the distance across the isthmus there is less than a hundred miles.

Illinois Central.—This company is constructing a system of docks on the east side of its present freight yards at the mouth of the Chicago River, being in the outer harbor of Chicago. One now approaching completion will be 1,000 ft. long east and west and 300 ft. wide. This is north of the line of Randolph street, but another one is begun on a line with Randolph street, with which it is to be connected by a viaduct over the tracks. The new docks are intended especially for the lumber trade.

Illinois Railroad Commission.—The Illinois Railroad and Warehouse Commission met in Springfield, Sept. 7, to consider railroad complaints. A petition of the shippers along the line of the Rock Island & Mercer County road, asking that the road be changed from the fifth group to the first, so as to lessen the traffic rate was presented. Testimony was received from each side, and it was decided to hold a meeting at Rock Island Oct. 7 to take further testimony and examine the road. In the complaint of E. L. Randolph, of Bloomington, against the Chicago & Alton Railroad, Randolph wrote the Commission that inasmuch as the

road has stopped giving rebates he desires that his complaint shall rest for the present. The complaint of G. W. and Sam Hill, of New Athens, was for extortion and unjust discrimination against the Cairo Short Line. As it did not appear from the evidence that complainants lost any business by the low rate on flour from Belleville to East St. Louis, or that they were required to pay an extortionate rate from Athens to East St. Louis, the complaint of unjust discrimination was not sustained. The complaint of extortion to the amount of \$73.60 was sustained. Culver & Co., of Chicago, complained that the Chicago, Burlington & Quincy charged truckage of two cents per 100 lbs. extra on two cars of grain that were held over for inspection. The complaint was sent to the company for their answer. The complaint of G. W. Wicks, of Mill Shoals, against the Ohio & Mississippi, was laid over until the company could be heard in defense.

Johnson City Narrow Gauge.—This road, which is to extend from Johnson City on the East Tennessee, Virginia & Georgia Railroad to the Cranberry ore mines in Mitchell County, N. C., has been projected for sometime, and about twelve miles have been graded, but the work abandoned. Recently Messrs. Hardee & Co., of Philadelphia, who are largely interested in the Cranberry mines, have agreed to complete the road on condition that the East Tennessee, Virginia & Georgia Company subscribe \$150,000 towards the cost, and work will shortly be commenced. The road will be of 3-ft. gauge, about 30 miles long, and, as the country is favorable, no heavy work will be required.

Lake Erie & Western.—It is reported that the line of the extension of this road, from Fremont to Sandusky, towards the building of which the city of Sandusky voted to subscribe \$60,000, has been located from Fremont to a point on the Cincinnati, Sandusky & Cleveland Railroad about two miles from Sandusky. The right of way is said to have been nearly all secured and work commenced at several points on the line. Ties are being got out, and rails are already at Sandusky, where the work of laying them will commence and be prosecuted as rapidly as possible.

Leadville, Breckenridge & Denver.—Certificates of incorporation of a company of this name were filed Sept. 6, the capital be \$2,500,000. The plan is to construct a narrow-gauge railroad from Leadville, Col., by way of Breckenridge through Lake, Summit, Park, Boulder, Grand, El Paso, Douglas, Weld, Jefferson, Clear Creek, Galpin, Routt and Arapahoe counties to Denver. The principal office is to be in New York.

Lexington & Big Sandy.—The bridge over the Big Sandy at Catlettsburg is completed, and trains were to be running to Ashland by Aug. 20. About 2,000 hands are at work on the line.

Louisiana & Missouri River.—The earnings of this road, which includes the portion of the Chicago & Alton from the Mississippi River at Louisiana, Mo., westward 101 miles, are reported as follows for the second quarter and the first half of the year:

	1880.	1879.	Increase.	P. c.
Three months ending with June.....	\$97,121	\$61,470	\$35,651	58
Six months ending with June.....	207,596	116,783	90,813	78

Last year this road did not have the advantage of the Chicago & Alton's own Kansas City line until June; but it had instead the connection with the St. Louis, Kansas City & Northern for Kansas City traffic, and that used just as much of the road.

Michigan Central.—The new iron bridge at Niles will be completed by the end of September, and then there will be a double track through between Niles and Michigan City.

Nashville, Chattanooga & St. Louis.—The Southern Express Company has brought suit against this company in the United States Circuit Court, at Nashville.

After reciting that the Louisville & Nashville, the Louisville, Cincinnati & Lexington, and the Louisville, New Albany & Cincinnati Railroad companies have combined to exclude the Southern Express Company from their lines under the pretense of themselves engaging in the express business, the bill prays:

"That the said defendant may be decreed by this court to transport, at all times, the express matter of the said Southern Express Company, by the same trains, and with the same accommodations thereon, and in its depots and stations, as it may transport its own express matter, or as it may accord to itself; and that the said defendant may be decreed so to transport the said express matter of the said Southern Express Company, at and for the reasonable freights and toll in that behalf; and that the said defendant may be decreed to make a reasonable rebate or reduction, to be fixed and determined by this honorable court, from its charges to the said Southern Express Company, by reason of its performance of said accessorial service as above specified; that the defendant may be restrained and enjoined, as prayed for in said original bill, and from interfering in any manner with the enjoyment by the Southern Express Company of the facilities which it is now enjoying, and which have been heretofore accorded to it on the lines of said defendant's railway; and that the defendant may be restrained from interfering with the said business of the Southern Express Company upon its trains and at its depots and stations, and in any manner or way whatsoever, so long as the said Southern Express Company shall offer to conform to all the reasonable rates and regulations of the said defendant, and to pay all lawful charges for the transaction of its said business.

Rails have been laid on the McMinnville & Manchester Extension from McMinnville northeastward to Collins River, three miles. As soon as the bridge over Collins River is completed, it is expected that rails will be laid rapidly until Caney Fork is reached, where the extension will terminate for the present. It will probably be put in operation within the next two months.

Nantasket Beach.—This little sea-beach road, which was opened last July, was closed for the season on the 15th. Before the next season it is to be extended to Tudor's Point, in Hull, and also to a connection with the Old Colony Railroad near Weir River.

Nevada & Oregon.—The Carson Times says that John T. Davis, the President of this proposed narrow-gauge road, states that within a year it will be built beyond Susanville. The road is to run from a point near Aurora, Nevada, to the border lines of Nevada and Oregon on the western shore of Goose Lake. Its line will be through Esmeralda, Douglas, Ormsby, Washoe and Roop counties, Nevada, and Sierra, Lassen and Modoc counties, California. The capital of the company is fixed at \$6,000,000.

New Jersey Southern.—The track for some distance on the sand spit, about 10 miles south of Sandy Hook, between the ocean and the Shrewsbury River, was washed away Sept. 9 by a great northwest storm at high tide, which carried the surf over the road-bed. The running of trains was suspended, and all the Long Branch traffic was sent over the New Jersey Central.

New Mail Route.—Mail service has been ordered over the

Nevada Central Railroad between Battle Mountain and Austin, about 100 miles, to begin Oct. 1 and take the place of stage service.

New Orleans Pacific.—Sept. 8 there was recorded at Shreveport, in the parish of Caddo, La., a mortgage of all this company's road, equipment, owned and to be acquired, for \$7,100,000. The lines specified are a main line from New Orleans to Shreveport, and branches to Texas, to Opelousas and to Baton Rouge. The Shreveport Times says: "The contract for constructing the road from New Orleans to Shreveport was ratified on Aug. 22, and work on that portion of the road between this place and Lecompte station was to be begun within 30 days after the ratification of the contract and to be completed by Aug. 1, 1881. The work on the road will probably not be commenced sooner than Oct. 1, and as the operation of construction begins at both ends of the line, it is thought the entire road between this place and New Orleans will be completed and in running order within the next 12 or 14 months."

New York Elevated Consolidation.—Last Wednesday Messrs. John A. Stewart, R. G. Rolston and Henry F. Spaulding, the arbitrators appointed to decide on what terms the New York Elevated and the Metropolitan Elevated companies should be consolidated with the Manhattan (lessee) Company, made the following report:

"The subscribers, to whom, as arbitrators, has been submitted, by the New York Elevated Railroad Company and the Metropolitan Elevated Railroad Company, the question what are the comparative rates under all circumstances of the stocks of the New York Elevated Railroad Company and of the Metropolitan Elevated Railroad Company to be taken as a basis of merging with the Manhattan Railway Company, under Chapter 503, Laws of 1879, having heard and weighed the testimony presented by both companies, and having given due consideration to the matter, decide that the comparative rate at which the stock of the New York Elevated Railroad Company shall be taken is one hundred and ten and that the comparative rate at which the stock of the Metropolitan Railway Company shall be taken is ninety as the basis of merging with the Manhattan Railway Company under Chapter 503, Laws of 1879."

Concerning this award the New York Tribune says:

"The award is not final until it has been sanctioned by the stockholders of the two companies. A meeting of the directors of the New York Company will be held to-day, when a special meeting of stockholders will probably be called. The Metropolitan Company yesterday took no steps toward a ratification of the decision. There are different opinions in regard to the probable action of the stockholders. It is said that the directors of neither of the three companies control a majority of the stock, and that therefore the result is still in doubt. The Metropolitan Company is dissatisfied that its stock should be reduced to 90, while many large stockholders of the New York Company are reluctant to accept 110 for their stock, which is thought by some at least to be a 15 per cent. stock. The examination of F. E. Worcester, Auditor of the Manhattan Company, before the board of arbitration showed some curious facts in regard to the traffic and earnings of the different lines. It was shown that for the nine months ending June 30, 1880, after paying operating expenses and interest on bonds, the New York lines earned a net dividend equal to 9.40 per cent. a year on its capital stock, and that the Metropolitan Company during the same period earned only 5 per cent. a year on its stock. Mr. Worcester testified that if allowance was made for the exchange of passengers at the Chatham Square junction the earnings of the New York Company would be increased to 10½ per cent. a year, while those of the Metropolitan Company would be reduced to 4 per cent. a year on the basis of the nine months' business. It was shown also that during July the Metropolitan did not earn sufficient to pay its working expenses and interest on its bonds by about \$15,000, while the New York lines during the same month earned a dividend of 6.72 per cent. a year; that for twenty-eight days of August the Metropolitan failed to earn interest on its bonds, after payment of working expenses, by \$13,897, while the New York Company earned during the same period a dividend on its stock of 6.36 per cent. a year. The net earnings of the two companies since the opening of the Second Avenue line to Harlem River, Aug. 16, to Sept. 7, were stated to be: Of the New York Company at the rate of an annual dividend of 5.30 per cent., while those of the Metropolitan Company fell short of the working expenses and interest charges by \$7,815. Since that time the traffic has increased on all the lines, but nearly in the same proportion. Upon this difference in the earning capacity of the two systems the friends of the New York Company based their claims for an increased valuation of its stock.

"The position of the Manhattan Company in the plans for a union of the companies has not yet been filed. In the original discussions of the subject Mr. Field proposed, as an equitable basis, New York 110, Metropolitan 90 and Manhattan 80. There was a proposition that preferred stock should be issued for the two former and common stock for the Manhattan, but there were said to be serious obstacles in the way of adopting this course. When the arbitrators were appointed they were asked to fix a basis for the merging of the two companies with the Manhattan Company under Chapter 503, Laws of 1879. No authority is said to be given by this act for the changing the capital stock of the lessee company. Stockholders of the Metropolitan and New York companies will not consent to the exchange of their guaranteed stocks for the stock of the Manhattan Company."

New York, Lake Erie & Western.—The report of earnings for July shows an increase of 24 per cent. in gross and 79 per cent. in net. For the ten months of the fiscal year ending with July the report is:

	1880.	1879.	Increase.	P. c.
Gross earnings.....	\$15,299,818	\$12,999,365	\$2,300,513	17.7
Expenses.....	9,657,941	9,385,318	272,623	2.9

Net earnings..... \$5,641,877 \$3,613,987 \$2,027,890 56.1
The increase in gross earnings for July was 24 per cent. against 30½ on the New York Central and 23½ on the Pennsylvania. For the ten months the increase in the New York Central was 18.4 per cent., against 17.7 per cent. on the Erie.

New York, Pennsylvania & Ohio.—This company, it is said, will build a branch (six miles) on the old tow path from Sharon, Pa., southward to Middlesex.

New York Underground.—The President of this new company, Gen. Geo. B. McClellan, Sept. 14, made the following report to the board concerning the plans of the Chief Engineer.

"I have the honor to report that in compliance with your resolution of Sept. 9, I have examined the plans proposed by Mr. Morris. His general design is for a double-track road of 4 ft. 8½ in. gauge within two parallel archways. At stations, and at a few points where the grade line approaches unusually near the surface, and at points where your track for freight purposes will be required, it is proposed to replace the arched roof by one supported by iron trusses.

"As a rule the stations are to be beneath the sidewalk. The principal drawings prepared by Mr. Morris consist of plans and profile for the proposed route, and a general cross-

section of the archways. These are herewith submitted marked. The plans and profile have been evidently prepared with great care and accuracy. They indicate all known obstacles, such as gas and water pipes, the location of stations, the grades of streets and the roadway.

"The detailed arrangements for the termini are not yet elaborated. The general cross-section of the archway represents the normal or usual dimensions of the masonry structure, and shows the proposed application of concrete, asphalt, invert arches, etc.

"This section appears to be of ample strength to resist the greatest average pressure, and to bear the heaviest load anticipated.

"As the nature of the subsoil and the relative positions of the grade line and high-water mark will vary in different parts of the line it will be necessary to modify the several sections somewhat for different localities.

"Mr. Morris deserves great credit for the manner in which he has performed his work, and has evidently studied the subject thoroughly.

"Regarding his plans as affording a satisfactory general solution of the problem, subject to such modifications in detail as future study and proper application to the different portions of the line may render advisable or necessary, I affirm them, and recommend them to the board for action."

Northern Pacific.—A telegram from Bismarck, Sept. 7, says: "Chief Engineer Anderson, of the Northern Pacific Railroad, with an assistant, two drivers and a cook, with an outfit and two buckboards, started yesterday on his trip across the continent. He goes by rail to the end of the track, then on his buckboard through the bad lands into Montana, up the Yellowstone Valley over the mountains looking for the best pass through Idaho and down the Columbia River to Puget Sound. He will make a thorough inspection of the route to the Pacific, with the view of definite location. In his absence Colonel Clough, of Minneapolis, is Engineer-in-Chief on the extension."

The earnings of the road in August for the first time this year were a trifle less than those for the corresponding month last year, which is accounted for by the later harvest. The wheat had begun to move pretty freely last year, while threshing was hardly begun this year. The gross earnings for July and August are \$443,548 this year, against \$403,251 last, showing an increase of 10 per cent. The land sales in Minnesota and Dakota for the same time amounted to \$86,000.

A despatch from the end of the track in Dakota, dated Sept. 13, says: "Track laid 28 miles west of Green River. Will reach Pyramid Park, 'Bad Lands,' this week, and the Little Missouri two weeks later. Loaded 37 cars with cattle at Gerton River to-day, and more coming." To the end of the track is 133 miles west of the Missouri. To the Little Missouri River is 30 miles farther.

Ohio & Mississippi.—The Receiver's statement of receipts and disbursements for June and July is as follows:

	June.	July.
Cash on hand 1st of month.....	\$38,985	\$155,030
Receipts of month.....	393,296	504,081
Total.....	\$432,281	\$659,111

Disbursements:
Vouchers, pay-rolls and averages subsequent to Nov. 1, 1879..... 277,251 467,496

Cash on hand end of month..... \$155,030 \$191,615

The receipts are, doubtless, substantially the same as the gross earnings for the month. The disbursements may cover expenses of previous months, and may be more or less than the current working expenses.

Pennsylvania.—The construction of a branch road from New Haven, Pa., to the Connelville Coke & Iron Company's works will be commenced by this company in a few days, it is reported. The new ovens, when opened, are expected to give employment to 2,000 men.

Philadelphia & Atlantic City.—The filling of the deep cut at Newton Creek is progressing. The completion of the work will permit faster running, as trains are compelled to go slowly over the present trestle work, which bridges the cut.

Philadelphia & Reading.—The receivers made the announcement, Sept. 15, that as guarantors of the divisional coal and mortgage bonds of the Philadelphia & Reading Coal and Iron Company they will purchase the overdue July, August and September interest and coupons of the bonds of the respective tracts at a rate named; it being agreed that the principal of all the bonds and all after-accruing interest thereon shall retain priority of lien over the coupons and interest so purchased.

Pittsburgh & Lake Erie.—There are projects now in hand for various corporations in Pittsburgh and Allegheny City, which are said to be intended to give the Pittsburgh & Lake Erie access to all parts of the river front and nearly all the manufacturing, which is of the first importance in a place like Pittsburgh, where it is absolutely essential to a large part of the works that they should have a siding on their own grounds, a transfer by wagon costing more than the business will afford. In this the Pennsylvania Railroad, as first on the ground, has a great advantage, being already connected with nearly all the works.

Pittsburgh, Titusville & Buffalo.—It is reported by a telegram to the Associated Press that this company Sept. 9 entered into a contract with a representative of a number of refineries near Oil City to transport their production, amounting so 150 to 200 cars of oil a day, over its road to Dunkirk and thence by the Lake Shore to Buffalo—oil which hitherto has gone by the Erie & Pittsburgh via Girard. This would give the Lake Shore a haul of but 49 miles, against 103 miles on shipments by Girard. The daily production of 150 to 200 car-loads—amounting to 600,000 to 800,000 gallons—must be enormously exaggerated, however. Oil City is comparatively an unimportant refining point, and the total daily production of the country cannot be much more than 1,500,000 gallons, most of which is refined at Cleveland, Pittsburgh and New York.

The Philadelphia Times says: "Some time ago the company made an arrangement for a merger with the Buffalo & Southwestern by which it would be enabled to reach Buffalo over the Dunkirk, Allegheny Valley & Pittsburgh from Jamestown. The New York, Lake Erie & Western, seeing in this a chance to give the New York, Pennsylvania & Ohio an entrance into Buffalo, came into the market and outbid the Titusville Company, so that the owners of the Buffalo & Southwestern went back on their promises and took the higher offer. The Titusville was therefore driven to seek another outlet, and they have concluded to get by building a new road from Prospect station to Buffalo, as has already been stated. The name of the new company will be the Buffalo, Pittsburgh & Western, its location from Buffalo through Erie and Chautauqua counties to Prospect station of the town of Portland, a few miles below Brocton; its capital, \$1,250,000, which has already been subscribed, and its directors, persons directly interested in the Titusville road, together with a number of New York and Buffalo capitalists. It will run almost parallel with the Lake Shore, and will get an entrance into Buffalo over the Buffalo City

road, which is open to all the roads coming into that city on the same terms. The line has been surveyed and found to be an easy one, and the location will be fixed in a few days. President Jones has also made an agreement with the representatives of the Standard Oil Company by which tonnage of refined oil worth from \$5,000 to \$7,000 a month net will be secured for the line.

Rochester, Nunda & Pittsburgh.—It is reported that this road has been sold to a Mr. Chapman, of Columbus, O., who, it is said, will complete the road. The predecessor of this company, the Rochester, Nunda & Pennsylvania, about 1874 built 18 miles of road from the Buffalo Division of the Erie at Nunda, N. Y., northward to the Danville & Mt. Morris Branch of the Erie near Mt. Morris; but it has never been operated, and must be in a very dilapidated condition by this time.

Securities Admitted to the New York Stock Exchange.—An issue of \$2,000,000 of an authorized issue of \$4,000,000 of the Metropolitan Elevated Railway Company's 6 per cent. second-mortgage bonds, maturing Nov. 1, 1899, has been admitted upon the Stock Exchange list.

The stock and bonds of the Little Rock & Fort Smith Railroad Company have been admitted to the Exchange. The stock, \$4,000,135 (\$24,825 per mile of road) and there is issued \$2,649,457 (\$16,057 per mile) of an authorized issue of \$3,000,000 first-mortgage 7 per cent. bonds, payable Jan. 1, 1905. The company owns 867,000 acres of land besides its 165 miles of road. There is a debt of \$592,115 in notes issued and to be issued for past-due coupons. The annual interest charge is about \$185,500; the net earnings in 1878 were \$171,789; in 1879, \$156,829, with an additional \$25,335 of additional "available receipts" reported. This year the earnings are reported much improved.

Shenandoah Valley.—The local headquarters of this road were removed, Sept. 3, from Charlestown, West Va., to Hagerstown, Md., where will be the offices of Joseph H. Sands, General Superintendent; G. H. Dugdale, General Freight and Ticket Agent; and Joseph W. Cox, Auditor. The office of Wm. G. MacDowell, General Agent and Treasurer, remains at No. 35 South Third street, Philadelphia.

Tide Water Pipe Line.—This company reports that during the month of August it received 195,249 barrels of crude petroleum and delivered 85,482, and at the close of that month it had in its custody 1,345,702 barrels.

Toledo & Ann Arbor.—It is reported that John B. Alley, of Boston, who has been the chief owner of the road, and provided the money for its construction, has sold out his interest, and that it has been bought by parties who will extend the road from Ann Arbor northeast to Pontiac, about 35 miles, whence a connection may be had by the Michigan Air Line with the Grand Trunk. It has been reported that the Grand Trunk would assist in this project and use the whole road for a connection with Toledo; but the construction of a line in the interest of the Wabash to Detroit will give it access to most of the Toledo traffic without any further expenditure on its part, and persons connected with the company deny that it has anything to do with the Ann Arbor project.

Toledo, Delphos & Burlington.—A telegram from Toledo Sept. 8 says that this company had just closed contracts for the extension of its road from Kokomo, Ind., to St. Louis, 250 miles, and that the connection with the Dayton line will soon be completed.

Tonawanda Valley.—This road, which will extend from the Erie at Attica, N. Y., south by west about 30 miles to the Buffalo, New York & Philadelphia at Arcade, was opened for traffic from Attica southward to Currier's Corners, 19 miles, with an excursion, Sept. 11. It is of three feet gauge. It is nearly parallel with and generally but six or eight miles west of the Rochester & State Line road.

Utah Eastern.—A Salt Lake paper says that the iron for 23 miles of this road has been purchased and is on the way to Echo, on the Union Pacific, where track-laying will begin, the road-bed being ready and the ties placed for the rails.

Vernon, Greensburg & Rushville.—A regular train is now running on this new road, from Greensburg, Ind., southward 15 miles to Westport. Surveys are in progress from Greensburg north to Rushville.

Wisconsin & Minnesota.—This branch of the Wisconsin Central, which is to extend from Abbotsford west 60 miles to Chippewa Falls, and in connection with the Chicago, Minneapolis & St. Paul will complete a very direct line from St. Paul nearly due east to Lake Michigan at Manitowoc, is so well advanced that there is talk of running trains through by the first of November. Track is laid for 20 miles west of Abbotsford. It is said that a winter ferry line of steamers will be established between Manitowoc and Pentwater, the end of the Flint & Pere Marquette, and that active competition for the grain and flour shipments of St. Paul and Minneapolis will be begun this winter.

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Detroit, Lansing & Northern.

For the year 1879 this company worked 160.60 miles of main line and 40.68 miles of branches, making a total of 201.28 miles, an increase of 9.18 miles over 1878. At the close of the year it had the main line from Detroit to Howard City, 160.6 miles, of which 156.6 were owned and four miles at Detroit and Lansing leased from other companies; the Stanton Branch, Junction to Mecosta, 48.71 miles; Belding Branch, Kidding to Belding, 1.67 miles; and Slaght's Branch, Junction to Hemmingway, 1.40 miles, making 208.38 miles owned and 201.28 miles worked. There were 32.68 miles of sidings. The company is a reorganization through foreclosure of the Detroit, Lansing & Lake Michigan.

The equipment consists of 28 engines; 15 passenger, 6 combination, 2 baggage, 2 service cars; and 304 box, 16 stock, 479 flat, 16 caboose, 1 wrecking and 1 carpenter's tool cars. Two engines were added during the year and one was sold, being unfit for the service now required. Two new baggage cars have been built and one combination car at the company's shops at Ionia, the latter to replace a similar car unfit for further service. Several cars of different classes have been rebuilt or repaired, and the whole equipment is in good condition. Two new engines are imperatively needed.

Common stock.....	\$1,825,617.52
Preferred stock.....	2,503,380.00
Total (\$20,775 per mile).....	\$4,328,997.52
Bonds (\$15,400 per mile).....	3,106,000.00
Accounts, balances, accrued interest, etc.....	244,526.52
Balance of income account.....	152,845.94
Total.....	\$7,892,369.98
Construction.....	\$6,852,003.96
Equipment.....	545,288.50
Cash and bills receivable.....	292,789.13
Supplies and materials on hand.....	60,859.03
Trustees of sinking fund.....	110,445.58
Sundry accounts due.....	30,083.78
Total.....	\$7,892,369.98

The stock represents a large part of the old bonded debt. The bonded debt consists of \$2,265,000 bonds issued by the present company, and \$901,000 old sectional bonds, not extinguished by the foreclosure.

Train mileage.....	1879.	1878.	Inc. or Dec.	P. c.
Passenger.....	208,757	237,722	I.	31,035 13.1
Freight.....	304,206	325,800	I.	68,518 21.0
Service and switch- ing.....	215,111	221,494	D.	6,383 2.9
Total.....	878,074	785,106	I.	92,970 11.8
Passengers carried.....	434,102	372,981	I.	61,121 16.4
Passenger mileage.....	10,920,183	8,890,371	I.	2,029,812 22.8
Tons freight carried.....	417,708	364,737	I.	53,031 14.5
Tonnage mileage.....	40,427,519	32,363,431	I.	8,164,088 25.3

Average receipts: Per passenger mile..... 2.57 cts. 2.66 cts. D. 0.09 cts. 0.4 Per ton per mile..... 1.945 cts. 2.141 cts. D. 0.201 cts. 1.0

The cost of locomotive service was 17.30 cents per mile.

Passenger-train cars have run 814,893 miles and freight cars 6,873,615 miles, 63.2 per cent. by loaded cars.

The earnings for the year were as follows:

Passengers.....	\$280,142.88	\$236,734.89	I.	\$43,407.99 18.3
Freight.....	780,764.91	604,372.46	I.	176,392.45 13.3
Miscellaneous.....	42,024.80	38,926.65	I.	3,098.15 7.9
Total.....	\$1,102,932.59	\$879,033.90	I.	\$223,898.69 25.4
Expenses.....	\$59,787.20	\$67,835.03	I.	\$8,047.83 13.4
Net earnings.....	\$449,145.45	\$372,198.87	I.	\$76,946.58 20.7
Gross earnings.....	5,500.40	5,049.62	I.	450.78 8.6
Net earnings.....	2,231.44	1,937.32	I.	294.12 15.5
Per cent. of ex- penses.....	50.50	61.63	D.	2.13 3.5

The income account is as follows:

Balance Dec. 1, 1878.....	\$156,539.71
Gross earnings.....	1,102,932.59
Balance of miscellaneous interest account.....	7,920.28
Operating expenses.....	\$650,787.20
Interest on bonds.....	223,130.00
Dividends on preferred stock.....	237,021.50
Balance Dec. 31, 1879.....	\$152,845.94

Dividends of 7 per cent. on the preferred stock and 3½ per cent. on the common stock were paid during the year, and since its close additional dividends of 3½ per cent. of each have been made, which nearly absorbed the balance. The construction account being practically closed, the directors do not deem it necessary to accumulate any amount to the credit of income account.

The increase in the bonded debt, of \$290,000 7 per cent. bonds, has been made to cover the extensions from Stanton to Blanchard's and thence to Big Rapids. Both extensions are bringing good business to the company and promise still better results in the future. The bonds were negotiated at a premium of \$36,705.07, which amount has been paid over to the trustees of the sinking fund, who now hold \$115,000 bonds for the company.

During the year 4,501 tons of steel rails and 86,827 oak ties have been laid, making 127 miles of steel rails now laid. Two heavy grades, one between Chadwick and Kiddingville on the main line, and one near Fenwick's on the Stanton Branch, have been lowered. The bridges on the line have been strengthened and improved, the wooden trestle at Rouge River replaced by a wrought iron and stone bridge, the trestle west of Chadwick filled up, and new freight and passenger stations built at Meridian, Belding, Trufant's and Coral, also a new coal house and derrick at Ionia, and con-

siderable repairs and improvements made at several other stations. The condition of the road-bed has also been greatly improved; 24½ miles of new fencing have been put up, and 56½ miles of old fencing rebuilt.

The extension of the Stanton Branch from Blanchard to Big Rapids, about 25 miles, was under contract to be completed Dec. 1, but owing to unfavorable weather and some unexpected difficulties it was still uncompleted; grading, except raising on one or two sinks, was, however, substantially finished, and 21 miles of track laid, of which eight were ballasted. The cost, so far, had been \$176,899.38, and an additional outlay of \$43,700.00 was estimated as necessary, which would raise the cost to \$282,599.38, or about \$800 above the original estimate. It was hoped to open the extension early in 1880, and the prospects for a fair business from it were flattering.

The General Manager, in his report, estimates that the receipts for the present year promise a considerable increase over previous years.

Cleveland, Mount Vernon & Delaware.

This company owns a line from Hudson, O., to Columbus, 144.04 miles, and leases the Massillon & Cleveland road from Clinton to Massillon, 12.50 miles, making 156.54 miles worked. There are 15.67 miles of sidings on the line owned and 2.03 on that leased. The company also owns a line from Killbuck to Dresden, about 34 miles, which has been graded, but no track is yet laid.

The equipment consists of 22 engines, 16 owned and 6 rented from Pennsylvania Railroad Company; 13 passenger, 13 baggage and express; 70 box freight, 5 stock, 10 platform, 515 coal, 10 caboose, 1 wrecking and 1 tool cars, which is no change in numbers; but 45 of the coal cars were rebuilt during the year. Both the freight and passenger equipment need some slight additions.

The report is for the year 1879. The general account is as follows:

Stock (\$12,280 per mile).....	\$1,760,579.95
Bonds (\$24,219 per mile).....	3,487,491.75
Coupons and interest matured, unpaid.....	283,231.37
Bills and accounts payable.....	47,169.24
Total.....	\$5,587,472.31
Road, etc. (\$32,143 per mile).....	\$4,028,525.61
Dresden Branch, incomplete.....	202,850.97
Cash, materials and miscellaneous assets.....	39,131.69
Income account, debit balance.....	716,958.04
Total.....	\$5,587,472.31

The bonded debt consists of \$1,350,000 first-mortgage bonds, \$950,000 Columbus Extension bonds, \$669,000 income bonds, and \$518,491.75 funded coupons. Of the stock \$451,450 is preferred.

The traffic for the year was as follows:

Train mileage.....	1879.	1878.	Inc. or Dec.	P. c.
Passenger.....	182,000	179,706	I.	3,194 1.77
Freight.....	214,150	214,520	D.	370 0.17
Total.....	396,150	394,316	I.	2,834 0.72
Passengers carried.....	238,992	228,693	I.	10,299 4.50
Passenger mileage.....	4,018,504	4,881,725	I.	36,783 0.75
Tons freight carried.....	310,044	250,823	I.	59,221 19.33
Tonnage mileage.....	15,000,994	13,098,004	I.	1,902,990 14.52

Average train load:

Passengers number.....	26.88	27.15	D.	0.27 1.00
Freight, tons.....	70.05	61.03	I.	8.99 14.70

The average receipt per train-mile and per unit of traffic were, in cents:

	1879.	1878.	Inc. or Dec.	P. c.
Per train-mile.....	101.73	94.92	I.	6.81 7.05
Per passenger per mile.....	2.05	2.57	D.	0.52 2.58
Per ton per mile.....	1.08	1.67	D.	0.59 5.33

The average rate per ton on local freights was 2.19, and on through freights 1.206 cents, against 2.40 and 1.22 in 1878.

Coal furnished about 40 per cent of the tonnage of the road and about one-half of the increased traffic of the year, but fears are entertained that this tonnage may be largely diverted, especially on the Massillon Branch, unless steps are taken to extend that line to the coal fields south of its present terminus, about 2½ miles.

The earnings for the year were as follows:

Freight.....	\$251,821.93	\$230,612.94	I.	\$21,208.99 9.20
Passengers.....	130,235.87	125,992.00	I.	4,243.87 3.37
Express mail, etc.....	21,967.98	26,093.18	D.	4,125.20 15.80
Total.....	\$404,025.78	\$382,698.12	I.	\$21,327.66 5.57
Expenses.....	376,063.82	317,727.01	I.	58,336.81 18.02
Net earnings.....	\$27,061.96	\$64,971.11	D.	\$37,909.15 58.32
Gross earnings per mile.....	\$2,580.98	\$2,444.73	I.	\$136.25 5.26
Net earnings per mile.....	172.88	522.07	D.	349.19 60.80
Per cent. of ex- penses.....	93.31	82.63	I.	11.28 1.41

The principal item of the increased expenses was for extraordinary renewals for maintenance of way, and the cost of running the motive power on account of the advance in coal.

The income account was as follows:

Earnings, Main Line.....	\$386,974.40
" Massillon Branch.....	17,051.38
Total.....	\$404,025.78
Expenses of Main Line.....	\$359,971.68
" Massillon Branch.....	16,092.14
Rent of Massillon Branch.....	20,000.00
Interest on coupon certificates.....	30,043.50
Interest on first-mortgage bonds.....	161,000.00
Total.....	\$588,607.32

Debit balance Dec. 31, 1879..... \$184,581.54

Debit balance Dec. 31, 1878..... 532,376.50

Total debit balance Dec. 31, 1879..... \$716,958.04

The Massillon Branch on its working shows a net earning of \$59.24 to meet the minimum rental of \$20,000, and a consequent loss to the company of \$19,940.76, which is, however, less than was incurred in 1878 by \$391.40.

About 780 tons of steel rails have been laid during the year, 101 tons iron rails and 69,010 new ties. Considerable ballasting has been done, and track, bridges, trestles and culverts improved and kept in good order. Two high trestles between Black Creek and Gann have been renewed in oak timber, and some progress has been made in fencing.